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People seldom improve when they have no other model but themselves to copy after.

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[1]Until Jan. 1, 1954, when Charles W. Craig will become Editor of the "Journal of Dental Education."
[2]Subject to the approval of the American Dental Association at its 1953 Annual Meeting in Cleveland.
[3]After May 1, 1953, Dr. Robinson will be at the University of West Virginia.

VOLUME 17 MAY, 1953 NUMBER 3

JOURNAL of DENTAL EDUCATION

Contents

Editorial:

Dental Students Register 109

Periodontology:

Principles Involved in Teaching 111

The Epidemiology of Periodontal Disease, *C. D. Marshall-Day*, D.M.D. 111

Current Status of Undergraduate Teaching in Periodontology, *B. O. A. Thomas*, D.D.S. 116

Graduate and Post-Graduate Teaching in Periodontology, *Irving Glickman*, D.D.S. 128

Methodology in the Teaching of Periodontology, *Harold Ray*, D.D.S. 134

Interrelationship Between the Basic Sciences and Periodontology, *Hamilton B. G. Robinson*, D.D.S. 141

Objectives of and Trends in the Teaching of Periodontology, *Willard C. Fleming*, D.D.S. 143

Are We Doing Our Job? *Millard E. Gladfelter*, D.D.S. 152

College News 163

Book Announcements 164

Strange how much you've got to know
Before you know how little you know.

—ANONYMOUS

EDITORIAL

Dental Students' Register

The 1952-1953 Register, issued by the Dental Educational Council, has only recently made its apearance. It consists of a series of twelve tables reporting certain data, all of which are of value in the administration of dental education.

However, some two or three of these tables may be of special significance and it is to these that your attention may be drawn. Table 1 pictures the total student enrollment by school in all schools and presenting that enrollment by classes. A look will reveal the number of freshmen, 3244, and the number of seniors, 2943. Somewhere during the four-year period nearly 10 per cent or more nearly 9.3 per cent, were lost. A glance over the list of schools shows this loss to be spread from none to one to twenty. One can but wonder what happened to those lost. Should we leave the ninety in the "fold" and go out to find the other ten? A further study and report on this might be helpful, both to those who become lost to dental education, and to dental educators in their interviews with applicants.

Table 2 presents total enrollment for the years 1943 to 1952, during which decade there has been a gain of nearly 4 per cent or 3356, the difference between 9014 in 1943 and 12,370 in 1952. The total gain over the years is reduced by the above mentioned loss, which if it were known might still have been in the dental field or the experience in the dental field might have been an influencing factor in the student's life. In either case dental education may have some unknown credit and in either case a young man's life might have been made more worthwhile. After all, whatever vocation one may adopt, it must be one that will allow him to live a full and fruitful life.

To those of us who were associated with dental education twenty or twenty-five years ago, Table 3 is not only interesting but is confirming. Or perhaps it allows us to say "I told you so." We go back to those days of hectic debate and all that goes with it, when it appeared to be necessary to lengthen the course of study. Without going into any of that detail, there were those of us who maintained that this question provided its own answer, for even in that early day there were schools whose student bodies contained many who had had one or more years of academic work. This table shows that 42 per cent of dental students

have the B.S. or M.S. degree; 34 per cent have had three and four years of college wrok without a degree; and only 24 per cent have the required two years of pre-dental work. That is to say a little less than one-fourth of the student enrollment have the minimum requirement for the study of dentistry. It would be interesting to know whether the loss between freshman and senior years is in this 24 per cent or the 34 per cent or the 42 per cent.

No one can doubt but that dental education is on a much higher plane than a quarter century ago, but neither can one doubt the need for improvement even now. Students must be led into more collateral reading and they must be taught to think more for themselves. There is too much of a tendency to enter the "Garrison State"[1] and which is confirmed by noticeable trends. We have been disciplined, first as children then as youth and later as men and women so that we have lost much of the idea of individuality. We need to get more of the spirit of the sentence from John Stuart Mill's essay on "liberty":[2] "A State which dwarfs its men, in order that they may be more docile instruments in its hands even for beneficial purposes—will find that with small men no great thing can really be accomplished." As teachers of young men and young women, we must get a new vision of our task, and teach these young folks to be individuals as well as dentists.

---

[1]The Garrison State—Its Human Problems, University of Minnesota, Social Science Research Center.
[2]*Ibid.*, page 41, Arthur E. Naftalin, Associate Professor Political Science, University of Minnesota.

PERIODONTOLOGY

PRINCIPLES INVOLVED IN TEACHING

The committee on teaching of the American Association of Dental Schools has for the past several years been considering specifically the various departments of dental education, giving careful study to that portion of the total curriculum devoted to a particular department. Following that order a subcommittee was appointed whose business it was during the past year to make a careful survey of the teaching of periodontology and to report at the annual meeting in Philadelphia, March, 1953. The entire field was divided into six areas and a speaker selected for each of these areas. The papers have been considered by the committee then in turn presented to the general session of the Association. A discussor had been selected to open the discussion of each paper following which the discussion was open to all present. No discussor presented a written discussion, all being informal, hence the prepared papers only are presented in order, as follows. Doctor Millard K. Hine, Dean, Indiana University School of Dentistry, presided, as chairman of the committee making the study.[1] (Ed.)

THE EPIDEMIOLOGY OF PERIODONTAL DISEASE

C. D. MARSHALL-DAY, B.D.S., D.M.D., M.S., Ph.D.,[2] *Boston*

Frequent reference has recently been made to the notable lack of reliable statistical data on the prevalence and other epidemiological characteristics of periodontal disease. The technique of carrying out routine surveys of this kind amongst population groups, in adequate numbers to yield reliably significant data can be as laborious as it is uninteresting and uninspiring. The recital of the results of such investigations in the form of tables, curves and bar-graphs can be equally devoid of interest and stimulation. Recognition of these facts probably has served to discourage investigators from pursuing this phase of the periodontal problem, and no doubt has been responsible in some measure at least for the scarcity of available information. Yet a knowledge of the epidemiological characteristics of a disease is a basic necessity in an evaluation of the extent of the problem, and usually a desirable, if not a fundamental requirement for a proper understanding of the disease process itself. Epidemiological research can also point the way to profitable avenues of investigation and furnish valuable leads on methods of approach.

The multiplicity of classifications that have been advanced from time

[1]Other members of the committee are: Paul A. Boyle, University of Pennsylvania; Willard C. Fleming, University of California; Irving Glickman, Tufts College; George R. Lundquist, Northwestern University; Harry Lyons, Medical College of Virginia; Samuel C. Miller, New York University; B. O. A. Thomas, University of Washington.

[2]Dean, Tufts College School of Dentistry.

to time, the absence of suitable survey techniques to provide a satisfactory and uniform method of assessment of the disease, the minor controversies as to whether gingival disease should be included in the all-embracing term periodontal disease, the difficulty in establishing a normal bone-height baseline in the various age groups, and the constantly changing and increasing knowledge of the various disease processes have all added to the difficulties of the epidemiologist and have served to invalidate a proper comparison of research findings. As a result of this confusion and lack of uniformity in diagnostic criteria and methods of assessment, reported prevalence figures by different investigators in the United States have varied as much as from 9 to 98 per cent for the same age group, and in Great Britain for the same age group in precisely the same area from 2 to 97 per cent.

Briefly, it can be stated that on the basis of the most reliable present day diagnostic criteria, periodontal disease is much more common, and has its incipiency at a much earlier age, than has been generally supposed. It is extremely widespread in its distribution and constitutes a serious public health problem. As an indication of the early onset and widespread distribution of the disease, a few figures may be quoted. Krasnow has reported 30 per cent with alterations from clear-cut normal aspects of the alveolar crests in a group of 6-9-year-old children; Gilson has reported periodontal disease with bone loss in 22 per cent of children aged 11-20 years, increasing to 85 per cent in the 36-45-year age group; Miller and Seidler found actual bone destruction in 9 per cent at 11-15 years of age increasing to 97 per cent at age 41-45 years; a 29 per cent prevalence has been reported in a group of young Army Air Force pilots; and the Illinois group have predicted that approximately 50 per cent of all males will have roentgenographic and clinical evidence of periodontal disease or will be edentulous as a result of it by age 45 years. Preliminary results from our own epidemiology study, proceeding at Boston under a U. S. Army grant, would seem to indicate that most of these figures are not pitchced too high. However, there is sufficient disagreement in even the latest published results, particularly in the case of the younger age groups to indicate that a satisfactory diagnostic baseline has not yet been established.

Epidemiological studies have taught us something of the pattern and sex distribution of gingivitis and periodontal disease, and of the relative distribution in the various regions of the mouth. Further investigations of this sort may provide some information regarding the role of occupation, habits, diet, pregnancy, malnutrition and systemic disease in the etiology of periodontal disorders. The possible relationship between the

high prevalence of childhood gingivitis and the incidence of periodontal membrane and bone changes in later life requires further examination. Many of these phenomena are still only incompletely understood, and much epidemiological, clinical and histo-chemical research will be required before entirely satisfactory explanations are forthcoming.

Epidemiology studies have served to underline the public health aspects of the disease and to focus attention upon the appalling neglect of periodontal disease by the public and by a too considerable proportion of the dental profession. As a profession we must accept the major burden of responsibility for this serious neglect.

One of the lessons that epidemiological research teaches us is that any public health program designed for the prevention, control and treatment of periodontal disease must be aimed in several directions. Research efforts and programs of dental health education for the lay public should be coordinated and intensified. A suitable program should be directed towards the medical and nursing schools so that the future physician and his associates will be trained in the recognition and importance of periodontal disease, and so be better prepared to cooperate in the recognition and elimination of possible predisposing systemic conditions and in the evaluation of the effects of periodontal disease on the physical state of the individual. In some other countries today the medical student is much better informed on matters pertaining to dentistry than is his counterpart in the United States, through the insistence upon an adequate series of lectures and demonstrations in dental and oral surgery and pathology. But first and foremost, if we expect any important success in the prevention and control of periodontal disease, our program must be directed towards the dental schools and the dental profession.

One of the most disquieting features in connection with the epidemiological study at present being carried out in Boston, is the large numbers of individuals receiving regular dental attention who have serious periodontal disturbance, obviously dating back many years, yet are entirely unaware they have a periodontal problem. Many of the cases referred to are from a good socio-economic level, many have just recently completed a series of dental visits and are willing and able to pay for periodontal care when the condition is brought to their attention. In such cases the dentist is either unable to recognize these conditions, is apathetic towards periodontal disease or feels unqualified to treat it.

I don't know whether any of you have seen the famous Golden Temple in Amritsar, in Northern India. It is the spiritual home of the Punjab Sikhs and one of the architectural beauties of the world. Yet not far distant are some of the most appalling slum areas on earth. The combina-

tion always reminded me of some of the mouths one sees, particularly in the East, but all too frequently in this and other western countries—beautiful gilded specimens of the dental art surrounded by periodontal disease and floating on a sea of pus. The Golden Temple of Amritsar and the isolated golden restoration in an otherwise neglected mouth is a measure of the Indian's striving after spiritual and physical beauty; the slums and oral neglect a measure of his ignorance, his abject poverty or the unavailability of dental services. We have none of these excuses, and our dentist-population ratio is certainly better than the Indian 1:400,000.

It is high time that dentists ceased worshipping at Golden Temples built over sewers and surrounded by Skid Row conditions. These are harsh words, and we know they do not apply to diplomates of the Periodontology Board, nor to the majority of dental practitioners in this country; but one has not practised, or worked in dental clinics very long until he has seen many instances of just such conditions. An epidemiology study provides too many unfortunate examples for professional peace of mind.

The fact that these conditions exist to an even worse degree in some other countries should not make for complacency here. It is axiomatic that no dental manipulations or restorations, however skillfully performed and beautifully executed, are of any real value as a health service unless due consideration is given to the total health of the oral cavity including the health of the periodontal tissues and integrity of the alveolar bone.

No phase of dentistry can be practiced with any degree of intelligence or success without a thorough understanding of the periodontal problem. It is just as important to the orthodontist and prosthodontist as it is to the oral surgeon and general practitioner. So often is the statement made that there should be a much closer liaison between the orthodontist and the periodontist for example, or the prosthodontist and the periodontist. Surely it would be still more desirable for the specialist in other fields and the general practitioner to *be* a periodontist.

This is where the dental schools enter the picture. It is where they have failed in the past, leaving a legacy of ignorance and apathy on the part of a not inconsiderable proportion of the dental profession, and an alarming accumulation of periodontal neglect. The primary responsibility rests with the dental schools. Fortunately, in recent years there has been a very notable increased awareness on the part of dentists and dental educators of the existence and importance of the periodontal problem. Dividends are already beginning to come in; yet there is much room for improvement. The recent survey by Craig[8] of the Univesrity of Cali-

[8] *Journal of Dental Education*, 16, 7; 1952 (Jan.).

fornia showed that the total number of clinical hours per student, in 36 of the 45 dental schools in the United States and Canada varied from a low of 31 to a high of 225, with an average of 111 hours per student, or only 7 per cent of the total clinical hours. Surely it would seem desirable and urgent that a decision should be reached as to what constitutes an adequate allocation of clinic time for periodontia, particularly since the survey shows that one school has only one-seventh the requirement of another.

Even with the best of goodwill on all sides, administrators know that any encroachment by one department into the clinic time of another is bound to lead to differences and conflict. Therefore this question should be given serious study by the American Association of Dental Schools and the Council on Dental Education. An authoritative statement by these organizations might conceivably strengthen the hands of the more forward-looking dental administrators who are sympathetic to change and already see the writing on the wall.

Just as our good friends the exodontists and prosthodontists may be considered the undertakers and funeral directors of dentistry, and the prevailing great need for their services to some extent an admission of failure on the part of the dental profession, so the continued need for gingivectomies and other more radical forms of periodontal therapy is a measure of our comparative failure in the periodontal field. Both in the dental school curriculum and in the dental office relatively too much attention has been devoted to the rehabilitation of mouths wrecked by periodontal disease, and not sufficient thought given to the prevention of gingival inflammation, alveolar destruction and tooth loss. Even with the admittedly large gaps in our knowledge, there seems no doubt that a more universal appreciation of the frequent early onset of the disease, and an early application of the known methods of detection, prevention and treatment, could lead to a great reduction in the accumulative results of periodontal neglect.

The dentist who fails to render an adequate periodontal service to a patient obviously in need of such service, is no less culpable than the man who refuses to treat child patients or renders them an incomplete service. In each case a course in dental ethics would probably be more beneficial than one in either periodontology or oral pediatrics. The referral of such patients to specialists in the respective fields is not necessarily a satisfactory fulfillment of the dentists' social and professional obligation. No one will deny that there is a need for specialists, particularly in the educational field; but the present day tendency towards over-specialization is spiralling the costs of complete dental service and

hastening the day when public demand and political expediency will usher in the bugbear of socialized dentistry. The dental schools can do much towards ensuring that the practice of dentistry remains under the control of the dental profession by seeing to it that our graduates, 80 per cent of whom will be general practitioners, are trained to render a complete service at a cost which the average wage earner can afford to pay.

Periodontology cannot be divorced from general dentistry. It is an integral and essential part of general dentistry, and as such should be adequately taught at the undergraduate level. As one who is in full sympathy with these ideas, I am glad to be able to report that at Tufts we have reached the stage where I have to apply the brake more often than the needle.

The prevailing educational philosophy states that the curriculum of studies should be determined by the felt needs of the times. An ever-increasing abundance of factual evidence, spearheaded by epidemiological studies and confirmed by clinical experience, points to the need for greatly increased emphasis on periodontology in the dental schools and in dental practice. It is up to us to see that something constructive is done about it.

CURRENT STATUS OF UNDERGRADUATE TEACHING IN PERIODONTOLOGY

B. O. A. THOMAS, D.D.S., Ph.D.,[4] *Seattle*

The following material includes the results of two questionnaires which were circulated by the author, one during 1951, the other in 1953. His sincere thanks go to the cooperative people, representing 46 dental schools in the United States and Canada, who completed and returned these questionnaires.

The answers to each section of the questionnaires have been analyzed and the results are shown below. In some instances, the implications (as interpreted by the author) of these answers follow the tabulated results.

The apparent discrepancy in figures which occurs several times in the paper is due to the failure of some persons to answer all questions or complete all blanks.

1951 Questionnaire

Item 1—The number of students per class in the dental schools varied from 12 to 150, with an average of 70.

Item 2—The number of full-time teachers in periodontia varied from 0 to 4 (average=1-1/45). The number of teachers spending one-half

[4]Professor, Periodontology, University of Washington College of Dentistry.

1951 PERIODONTIA QUESTIONNAIRE

School	Average Number in Class	Number of Periodontia Teachers			Periodontia Taught as:		Number of Periodontia Lectures				Preclinical Requirements (hours)	Clinical Requirements (hours)				Requirements O.K.–	
		Full time	One-half or more	Less than one-half	Separate Department	In Department of:	1st Year	2nd Year	3rd Year	4th Year		1st Year	2nd Year	3rd Year	4th Year	Yes	No
A	90	1	3	9	—	OP	0	4	30	30	—	—	—	—	—	x	
B	55	0	0	4	x		0	0	16	0	—	—	—	—	—		x
C	75	2	2	3	x		0	10	30	10	15	0	10	75	75	x	
D	48	3	1	1		DM	0	6	22	0	—	0	8	—	—	—	—
E	50	3	0	1	x		0	0	44	11	—	—	—	—	—		x
F	80	0	0	7	x		0	15	15	15	22	0	0	23	50	x	
G	60	2	0	3		DM	0	0	36	0	—	—	—	—	—	—	—
H	32	1	0	1		OpD	0	11	22	0	33	0	0	44	66		x
I	130	2	0	3	x		0	16	32	0	—	0	0	20	30		x
J	75	0	2	0		OM	0	0	16	0	—	0	0	20	20		x
K	96	1	0	5	x		0	0	16	16	12	0	0	20	20		x
L	135	2	1	2		OM	0	16	16	8	—	—	—	—	—	x	
M	80	0	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—
N	77	0	1	2		OpD	0	10	20	40	—	0	0	30	30	x	
O	105	2	0	7	x		0	0	30	15	—	—	—	—	—		x
P	38	2	0	3		OP	10	10	30	10	3	0	0	90	90	x	
Q	150	3	0	31	x		2	10	22	22	—	—	—	—	—		x
R	32	0	0	1		OP	0	0	16	0	—	—	—	—	—		x
S	50	0	2	1	x		0	0	25	Sem	—	0	0	120	150	x	
T	85	1	1	2	x		0	0	20	10	8	0	0	50	65	x	
U	96	1	3	0	x		0	0	32	0	—	—	—	—	—	x	
V	35	1	0	1		OM	0	0	22	0	—	—	—	—	—		x
W	35	1	0	4	Sec	OpD	0	0	12	30	—	0	0	12	75		x
X	103	2	2	0		OM	0	12	24	6	—	0	12	63	83	x	
Y	50	0	3	0	x		0	0	32	0	—	0	0	24	36		x
Z	90	1	0	1	x		0	0	16	32	16	—	—	—	—		x
AA	60	3	1	2		OM	0	3	36	6	—	—	—	—	—		x
BB	95	4	0	1	x		0	1	1	5	2	—	—	—	—	x	
CC	52	2	0	0	x		0	0	64	32	—	—	—	—	—	x	
DD	60	0	1	5	x		0	8	19	0	—	—	—	—	—		x
EE	70	0	4	6		OM	0	2	22	0	6	—	10	15	15	x	
FF	50	0	0	4		OM	0	3	32	0	—	0	0	30	65	x	
GG	68	0	3	0	x		0	0	16	16	—	0	0	48	48	—	—
HH	90	1	0	3	x		0	6	16	16	0	0	0	75	75	x	
II	79	1	0	4	x		0	16	16	8	15	—	—	—	—		x
JJ	30	0	0	2		OP	0	15	10	30	—	0	0	20	90		x
KK	69	1	1	0		OM	0	40	0	0	—	—	—	—	—	x	
LL	40	0	0	2	x		0	6	34	6	0	0	8	78	45	x	
MM	52	0	0	8	x		0	10	20	10	0	0	30	30	30	x	
NN	40	0	0	9	x		0	10	10	20	0	0	40	20	25		x
OO	100	1	0	7	x		0	16	16	8	16	0	0	40	60		x
PP	60	0	2	5	x		0	0	16	0	—	0	0	30	45		x
QQ	60	0	0	1	x		0	1	16	0	0	—	—	—	—		x
RR	60	2	0	1	x		0	11	33	33	0	0	0	60	60	x	
SS	105	1	0	2		OP	0	12	12	0	18	0	0	18	25		x
TT	50	0	1	3		OM	0	0	32	16	—	—	—	—	—	—	—

time or more in periodontia ranged from 0 to 4 (average=8/10). Periodontia teachers spending less than one-half time at the schools varied from 0 to 31 (average=3-1/4).

These figures indicate that we must attract a greater number of qualified persons into periodontia teaching if this phase of dentistry is to receive proper emphasis.

Item 3—Periodontia is a separate department in 26 dental schools. The remainder allocate periodontia instruction to the following departments: oral medicine (8), oral pathology (5), dental medicine and surgery (2), therapeutics (2), and operative dentistry (1).

Item 4—The number of periodontia lectures to undergraduate classes was reported as:

First year—one school gives two lectures; others none.
Second year—varied from 0 to 40 lectures (average = 6¼).
Third year—varied from 0 to 64 lectures (average = 23).
Fourth year—varied from 0 to 40 lectures (average = 9¾).

The records indicate a definite lack of uniformity as to when and how much didactic instruction is given in undegraduate periodontia courses. It is evident that more of the lectures are given during the third year than during the second or fourth years in most instances. We have no information as to the content of the lecture series at the different schools, but there is also probably little uniformity in this phase of the teaching.

Item 5—Preclinical (practical) requirements in periodontia ranged from 0 hours (13 schools) to 33 hours, with an average of 15 hours. This time is spent in a variety of ways: scaling artificial calculus on typodont teeth; phophylaxis and occlusal equilibration on mannequins; demonstrations of scaling and periodontia technics; prophylaxis on classmates.

There does not seem to be any general agreement as to what, if any, preparation is necessary before a student can satisfactorily begin his clinical work in periodontia.

Item 6—Clinical requirements in periodontia:

First year—no school had any requirement.
Second year—In eight schools, varied from 2 hours to 45 hours (average = 19 hours); the remainder had no requirement.
Third year—In 15 schools, varied from 12 hours to 120 hours (average = 49 hours).
Fourth year—In 17 schools, varied from 20 hours to 150 hours (average = 63 hours).

The requirements in terms of "points" or cases are tabulated in the separate chart appended to this report.

Several schools require complete periodontal treatment of all cases

assigned to the student. One school has no definite requirement other than "satisfactory proficiency."

As in the case of preclinical preparation, there is no semblance of uniformity as to the amount of clinical experience necessary for completion of the undergraduate course in periodontia.

Item 7—In the great majority of schools, the total clinic requirements equal the minimum graduation requirement in periodontia.

Item 8—Exactly 50 per cent of the persons answering this item stated they felt the periodontia requirement was not adequate (20 yes, 20 no, 5 not answered).

Item 9—The 20 persons answering "no" to item 8, suggested that the following be required to satisfy graduation standards:

Hours—varied from 150 to 300 (average = 225).
Cases—varied from 4 to 6 (average = 4⅔).
"Periodontia should occupy one-third of clinic time."
"At least double the present requirement."
"At least one-third more than present requirement."
"Should more nearly approach time spent in operative dentistry."

Item 10—The most important deterrents to attaining adequate requirements in periodontia were listed, in order of frequency, as follows: time (28); lack of teachers (17); lack of appreciation of periodontia by entire dental staff (12), lack of clinical material (10); money (7).

It is interesting to note that although financial difficulties are very often mentioned when teaching problems are discussed, only five persons listed money as a deterrent to the attainment of adequate periodontal instruction, while 28 schools apparently cannot allocate enough time to periodontia for its proper presentation. The fact that "lack of teachers" was listed as the second most frequent deterrent to satisfactory teaching in periodontia, supports the comment under item 2 above.

1953 Questionnaire

A. Historical

Items 1 and 2—According to the information received by the author, the first teacher of periodontia in a dental school was D, A. H. Peck, at Northwestern University, in 1898.

Item 3—The first separate periodontia department was established at the University of Michigan in 1912.

Item 4—The "landmarks" or "highlights" in the development of periodontia mentioned by the various schools are extremely interesting, but for space reasons could not be included in this report. As would be ex-

pected, these highlights centered around the men who developed the periodontia teaching programs and new facilities as they became available.

B. Basic Sciences

Item 1—This question asked how much emphasis is placed on the correlation of clinical periodontia and the various basic sciences by the different departments. The results were:

General Anatomy and Physiology—much (10), little (25), no (7).
Oral Anatomy and Physiology—much (27), little (13), no (2).
General Bacteriology and Pathology—much (20), little (19), no (4).
Oral Bacteriology and Pathology—much (33), little (8), no (1).
Biochemistry, Pharmacology—much (17), little (23), no (3).
Clinical Periodontia—much (35), little (6), no (0).
University (or other) hospital—much (10), little (18), no (12).

It would appear from these compilations that the general basic science courses do not usually present clinical applications of their material, which would make the subject matter much more interesting to the students. Perhaps it is enough that these courses teach general fundamentals which serve as background material for the more strictly dental basic sciences (oral histology, oral pathology, etc.). These latter courses stress clinical applications of such knowledge. It seems, however, that it would be very desirable to have students realize from the beginning that a knowledge of all basic sciences will aid him, or her, in clinical dentistry. The data above give additional support to the old statement that more graduate dentists, trained in specific fields of basic science, should be enlisted to teach in anatomy, physiology, pathology, etc.

Items 2 and 3—In reply to the question, "Do you have any clinical instructors in periodontia who also teach basic sciences?" 23 answered yes, 22 replied no. The 36 periodontia instructors listed as teaching in basic science subjects, distribute their time as follows: Oral pathology (8); general pathology (8); general histology (5); anatomy (4); bacteriology (2); oral histology (6); physiology (2); pharmacology (1).

According to these reports there is an average of less than one clinical periodontia teacher per school who instructs in a pre-clinical basic science subject. Certainly this situation needs to be improved.

Items 4 and 5—There is an effort to interest undergraduate students in periodontia research in 30 schools. Interest is stimulated in the following ways: students act as research assistants (10); senior thesis may be done in field of periodontia (8); required reading in periodontia research (6); students are made aware of problems still to be solved in periodontia (5); seminar discussions (3); students act as subjects in

1953 PERIODONTIA QUESTIONNAIRE

School	Correlation with Cl. Perio. by Basic Science Depts.*							Periodontia teacher also teaches:							Preliminary Periodontal Diagnosis made by:					
	Gen. Anat. & Phys.	Oral Anat. & Phys.	Gen. Bact. & Path.	Oral Bact. & Path.	Biochem. & Pharm.	Univ. Hospital	Cl. Perio. & above	Oral Pathology	Gen. Pathology	Gen. Histology	Anatomy	Oral Histology	Bacteriology	Physiology	Oral Diag. Ins.	Perio. Instructor	Student	O.D. & Perio. Ins.	O.D. Ins. & Stu.	O.D. &Perio. Ins. and Student
A	L	M	M	M	N	N	M	2									x			
B	L	L	L	M	L	L	M	–											x	
C	L	M	M	M	L	L	M	1				2			x					
D	M	M	M	M	L	M	–			1	1								x	
E	M	M	M	M	M	L	M						1						x	
F	L	M	L	M	L	L	M	–							x					
G	L	M	M	M	M	L	M					1				x				
H	L	L	L	L	L	M	M	–												x
I	M	M	M	M	M	L	M	–							x					
J	M	M	M	M	M	L	M						1		x					
K	L	L	L	M	L	N	M				1			1		x				
L	M	M	M	M	M	N	M		1						x					
M	L	M	L	M	M	M	M	1									x			
N	L	M	L	M	M	M	M	–									x			
O	M	M	M	M	M	L	M		1	1									x	
P	N	N	M	M	M	N	M		1			1							x	
Q	L	M	M	M	M	M	M				1								x	
R	N	L	L	L	L	N	L	–												x
S	M	M	M	M	L	–	L	–							x					
T	–	–	–	–	–	–	M	–							x					
U	L	–	L	M	L	–	M		1										x	
V	M	M	M	M	M	M	M		1	1					x					
W	L	M	L	M	L	All	M	–								x				
X	L	M	M	M	M	N	M	1	in	Pha	rm	acy								x
Y	L	L	L	L	L	M	M	–												x
Z	M	M	M	M	L	L	M	1								x				
AA	–	L	L	L	–	–	L	–							–					
BB	L	–	N	M	N	N	–	2											x	
CC	L	L	M	M	L	M	M	–							x					
DD	L	M	L	L	L	L	M	–											x	
EE	L	M	M	M	M	L	–		1	1							x			
FF	N	L	N	M	L	L	M	1				1							x	
GG	–	M	–	M	–	–	M		1		1				x					
HH	L	L	L	L	M	L	L	–							x					
II	L	M	M	M	L	N	M		1	1							x			
JJ	L	L	L	L	L	N	L	–							x					
KK	L	M	L	M	L	N	M	–										x		
LL	N	L	M	M	M	L	M	–							x					
MM	L	L	L	–	L	–	–	–									x			
NN	–	–	–	–	L	–	M	–								x				
OO	N	M	L	M	L	L	M					1				x				
PP	N	M	N	–	L	L	M	–												x
QQ	N	N	N	N	N	L	L	–							x					
RR	L	L	L	L	L	N	M							1	x					
SS	L	M	L	M	M	M	M	–									x			
TT	M	M	M	M	M	N	–	–							x					

*M—Much L—Little N—No

1953 PERIODONTIA QUESTIONNAIRE (Continued)

School	Final Perio. diagnosis by: Perio. Instructor	Student	O.D. Ins. & Stu.	Perio. Ins. & Stu.	O.D., Perio. Ins. and Student	Basis of Case assignments: Requirement	Student request	Avail. of cases	Quality of work	Requirement needs checked by: Perio. teacher	Perio. Dept. Head	Clinic Supervisor	Oral Diag. Teacher	Clerk	New Perio. cases assigned by: Same person check require. needs	Oral Diag. Dept.	Perio. Dept. Head	Clinic Supervisor	Perio. Instructor	Clerk
A	x					x				x								x		x
B				x		x	x						x		x					
C				x		x	x			x									x	
D				x					x	x						x				
E				x		x					x					x				
F		x				x						x			x					
G	x						x	x		x					x					
H					x	x	x		x	x					x					
I	x					x				x						x				
J	x					x	x			x					x					
K	x					x		x			x					x				
L	x					x			x			x		x	x					
M		x				x			x		x					x				
N	x						x		x					x				x		
O				x		x				—						x				
P				x		x		x			x					x				
Q				x		x				x				x	x					
R	x					x		x		x					x					
S	x							x		—						x	x			
T			x			x								x						
U	x					x		x		x					x					
V	x					x		x				x								
W	x					x				x					x					
X				x		x	x	x	x		x					x					
Y	x					x	x			x										x
Z	x					x						x					x			
AA	—					x	x	x		x					x					
BB	x					x	x			x					x					
CC	x					x						x			x					
DD	x					x	x	x				x								x
EE	x					x			x		x									
FF				x		x	x		x	x					x					
GG	x					x	x			x					x					
HH	x					x		x				x			x					
II	x					x	x			x						x				
JJ	x						x			—					—					
KK	x					x	x	x		x					x	x	x			
LL	x					x					—							x		
MM				x		x						x			x					
NN				x				x		x		x			x					
OO				x		x				—										
PP				x		x	x				x						x			
QQ	x					x		x		x							x			
RR	x					x	x				x						x			
SS	x					x						x					x			
TT	x					x				x					x					

1953 PERIODONTIA QUESTIONNAIRE (Continued)

School	Student req. to complete: All dental needs	Student req. to complete: Perio. treatment	Stu. res. for recalls: Yes	Stu. res. for recalls: No	Degree of emphasis* on treatment by: Prophylaxis	Curettage	Gingivectomy	Gingivoplasty	Flap Operation	Selective Grind.	Reconstruction	Orthodontia	Removable Splints	Fixed Splints	Dietary Analysis	Brushing	Massage	Restor. Dentistry	Degree of emphasis on demonstrations*
A	x		x		M	M	M	—	N	L	L	L	L	M	M	M	M	M	M
B		x		x	M	M	N	L	L	M	L	L	L	L	N	M	M	M	L
C		x	x		M	M	M	L	L	M	L	L	M	L	L	M	M	M	L
D	x		x		M	M	M	—	—	M	M	M	L	L	L	M	M	M	L
E	x	x		x	M	M	L	L	L	M	M	M	N	L	L	M	N	M	M
F	x			x	M	M	L	L	L	M	L	L	L	L	M	M	M	M	M
G	x			x	M	M	L	N	M	M	M	L	L	M	L	M	M	M	L
H		x	x		M	M	L	L	L	M	L	L	L	L	M	M	M	M	L
I		x		x	M	M	L	L	L	M	M	L	M	L	M	M	M	M	M
J		x	x		M	M	M	N	L	M	M	M	L	L	M	M	M	M	M
K	x		x		M	M	M	M	M	M	L	L	L	N	M	M	M	M	M
L	x		x		M	M	L	L	N	M	N	L	L	L	M	M	M	M	M
M	x		x		M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
N	x		x		M	M	M	M	L	M	M	L	M	L	L	M	M	M	M
O	x			x	M	L	M	L	L	M	M	M	L	L	L	M	M	M	L
P	x		x		M	M	M	M	M	L	M	M	M	M	M	M	M	M	M
Q	x			x	M	M	M	L	M	M	—	—	M	—	M	M	M	M	M
R	x			x	L	N	L	L	L	M	—	—	N	L	N	M	M	M	L
S	x			x	M	M	L	N	L	M	M	M	L	M	N	M	M	M	M
T		x		x	M	M	M	M	N	L	L	L	L	L	M	M	M	M	L
U				x	M	—	—	—	—	M	M	L	L	M	L	M	M	M	L
V	x		x		M	M	M	M	M	M	M	L	M	L	M	M	M	M	M
W		x		x	M	M	M	L	N	M	L	L	L	L	L	M	M	M	M
X		x	x		M	M	L	L	L	M	M	L	L	M	M	M	M	M	M
Y	x			x	M	M	L	L	L	M	M	M	M	L	—	M	M	M	L
Z	x			x	M	M	M	M	M	M	M	L	L	L	M	M	M	M	L
AA	x			x	M	M	M	—	—	M	L	—	L	L	N	M	L	—	L
BB	x			x	M	M	M	L	L	M	L	N	L	L	L	M	M	M	L
CC		x	x		M	M	M	L	L	M	L	L	L	L	M	M	M	L	M
DD	x		x		M	L	L	L	L	L	L	L	L	L	L	M	M	M	L
EE	x			x	M	L	M	L	L	M	L	L	M	—	L	M	M	M	L
FF	x			x	M	M	M	M	L	M	M	L	L	L	M	M	M	M	M
GG	x		x		M	M	M	L	N	L	M	L	—	M	M	M	M	M	L
HH				x	M	M	M	L	L	L	L	L	L	L	L	M	M	M	M
II		x	x		M	M	M	M	N	L	M	L	L	L	L	M	M	M	M
JJ		x	x		M	M	M	L	N	M	N	N	L	L	M	M	M	M	M
KK	x			x	M	M	M	M	L	M	M	L	L	M	L	M	M	M	M
LL			x		M	M	L	L	N	L	M	L	L	N	M	M	M	M	M
MM	x			x	M	M	M	L	N	L	L	L	L	L	L	M	M	M	L
NN		x		x	M	M	L	L	L	L	N	N	M	N	L	M	M	M	M
OO	x		x		M	M	M	M	L	M	L	L	M	L	M	M	M	M	L
PP		x	x		M	M	M	M	M	L	—	—	L	L	M	M	M	—	L
QQ		x			M	L	L	L	N	L	N	N	L	L	N	M	M	M	M
RR		x	x		M	M	M	L	M	L	L	L	L	L	L	M	M	M	L
SS	x		x		M	M	L	L	L	M	L	L	L	L	L	M	M	M	M
TT			x		M	M	M	L	L	M	L	L	L	L	—	M	L	M	L

* M—Much L—Little N—No

clinical experiments (2); student research society (1); students required to do biopsy on periodontia patients and study sections of tissue (1).

As was mentioned in the reports of three schools, the most important way to interest a student in any field is for the instructor to know his subject well and to teach it with enthusiasm. Interest is always aroused as a result of close student contact with an inspirational teacher.

C. Diagnosis, etc.

Item 1—The responsibility for the preliminary periodontal diagnosis rests on the following persons in the various dental schools: oral diagnosis instructor (16); periodontia instructor (6); dental student (7); oral diagnosis instructor and periodontia instructor (1); oral diagnosis instructor and dental student (10); periodontia instructor and dental student (0); oral diagnosis instructor, periodontia instructor, and student (5);

The responsibility for the final periodontal diagnosis rests on the following persons: oral diagnosis instructor (0); periodontia instructor (28); dental student (2); oral diagnosis instructor and periodontia instructor (0); oral diagnosis instructor and student (1); periodontia instructor and student (13); oral diagnosis instructor, periodontia instructor, and student (1).

The variety of answers to these questions can be interpreted in several ways. First, each school has its individual problems relative to numbers and qualifications of staff personnel, size of student classes, etc. In some institutions the oral diagnosis instructors may be very much interested in the field of periodontia and well qualified to make an accurate periodontal diagnosis. In some other schools, this may not be true.

It is obvious from the figures above that many schools are willing that the preliminary periodontal diagnosis be made by the oral diagnosis instructor, the student, or by these two together. When it comes to the final diagnosis, upon which treatment is predicated, however, these same schools place the responsibility on the periodontia instructor, or this person and the dental student. This may or may not indicate a discrepancy between the original assessment of the case in Oral Diagnosis and the final opinion rendered by the periodontia instructor. If such a discrepancy is of common occurrence, this problem must be solved, in order that the oral diagnosis instructors understand the view point of the periodontia staff.

Item 2—Periodontia cases are assigned to students chiefly on the following bases:

Need, relative to requirements for graduation (40);
Need (as above) plus request for case by student (18);
Need (as above), and availability of cases (14).

The remaining schools assign cases on the basis of various combinations of the above reasons. Only one school considers the quality of previous clinical work in periodontia by a student to whom a new case is being assigned. It is realized that availability of cases may make this impractical. This point is worthy of consideration by other schools.

Items 3 and 4—In 39 schools a specific person in periodontia has the responsibility of checking on students' needs for periodontia patients, while in the remaining schools (6), this is not the responsibility of any one person. In four schools the responsibility is apparently divided on the basis of the time when personnel are available. The persons who have this responsibility for checking students' periodontia requirements are: periodontia teacher (21); head of department (8); supervisor of clinic (10); clerk or secretary (4); oral diagnosis teacher (1).

Items 5 and 6—In 20 schools the same person responsible for checking students' periodontia requirements is in charge of assigning new cases. This is not true in the remainder of the dental schools, where periodontia cases are assigned by: Department of oral diagnosis (15); head of department of periodontia (3); director of clinics (3); periodontia instructor (2); oral diagnosis instructor and periodontia instructor in cooperation (1); clerk (3).

This information emphasizes the importance of having staff members of the oral diagnosis department especially well qualified in the classification and diagnosis of periodontal disease, since they are responsible for the preliminary diagnosis of these cases in 16 schools (see under item C-1) and for the assignment of periodontia cases in the same number of schools. However, the final diagnosis still rests with the periodontia instructor and student in 41 schools.

Item 7—The student is required to complete all dental needs of his periodontia cases in 27 of the dental schools, and is not required to do so in the other schools.

Items 8 and 9—The individual student is required to complete the periodontal treatment for each patient in 27 schools. In the remainder, the cases may be transferred, before completion of the periodontal treatment, to other students for one or more of the following reasons: student graduates before case is completed (7); when requirements are com-

pleted (5); if necessary to share patients for experience, due to shortage of cases (2); on completion of block assignment (2); juniors may transfer too difficult cases to seniors (2).

The question might be raised here regarding the effectiveness of the short period (two or three weeks) block assignment in periodontia clinic. While it is true that the student will see cases which have been partially treated by the previous student, and will also begin treatment of other patients, he does not have time to observe the complete response of any patient whose periodontal disease he has personally treated from the beginning. It might be asked whether the "short block" system of scheduling students in clinical periodontia successfully stimulates student interest.

Item 10—In 23 schools the student is responsible for the follow-up or "recall" treatment of his patients until he graduates. The author feels strongly that this should be required routinely in all schools. By observing the results of periodontal treatment for several months after its completion, the student is better able to evaluate his successes and failures in this field.

D. Treatment

Items 1 through 8—According to each school's evaluation of the relative emphasis (especially as regards amount of time spent in clinic teaching) placed on different phases of clinical periodontia, we find the following totals:

Subject	Emphasis		
	Much	Little	No
1. Prophylaxis (scaling, polishing)	45	1	0
2. Subgingival curettage	40	4	1
3. a. Gingivectomy	29	15	1
b. Gingivoplasty	12	27	3
c. Flap operation	9	24	10
4. a. Selective grinding	33	13	0
b. Reconstruction	20	19	4
c. Orthodontics	8	30	4
5. a. Splints (removable)	11	32	2
b. Splints (fixed)	9	32	3
6. Dietary analysis	21	18	5
7. a. Patient education (brushing)	46	0	0
b. Patient education (massage)	42	2	1
8. Restorative dentistry	43	1	0

It is interesting to note that the items which receive greatest emphasis, in terms of clinic hours, are: patient education, oral prophylaxis, proper restorative dentistry, curettage, selective grinding, and gingivectomy, Reconstruction and dietary analysis receive emphasis in about half of the dental schools. It would seem that the subjects of splinting, the inter-

relationships of orthodontics and periodontics and other types of surgery should receive additional emphasis if the student is to leave his school with a reasonable knowledge of adequate periodontal therapy methods.

Item 10—At nine schools there seems to be a great deal of difficulty in getting the necessary restorative dentistry done to complete the average periodontia case. In 20 schools this is accomplished with little difficulty and in 15 schools, this poses no problems at all.

E. Demonstrations, Seminars, etc.

Item 1—In 22 schools, all of the clinical experience in periodontia is gained by the student from working on his clinic patients. In the remaining schools the majority of the student's experience is gained in this manner. This is, of course, what we would expect.

Item 2—Demonstrations of various treatment methods by the staff receive much emphasis at 24 schools, but little emphasis at 21 others. If time allows, such demonstrations, to small groups of students, are an effective teaching tool.

Item 3—Students are given an opportunity at 30 schools to examine and discuss cases treated by other students, while they do not have such an opportunity at 15 other institutions. Since this is undoubtedly an effective way to learn, schools should consider more carefully how to stimulate thought and discussion among students relative to treated cases. This can also be expanded to include a discussion of cases before treatment, to give groups of students practice in treatment planning and prognostication.

Conclusion

The analysis of these questionnaires gives us a broad insight into the present status of the undergraduate teaching of periodontology in the United States and Canada. Finer details of individual problems cannot be included in a report such as this. We all know that a great deal of progress has been made in periodontia and in teaching this subject during the past 50 years. However, it seems obvious, from a study of the attached charts, that there is little uniformity in the various aspects of periodontia teaching today. Perhaps it would be well for us to decide, as a group, what our goal is in this field of dental education. Then it might be possible to bring all the schools a little closer to the ideal periodontia program.

The periodontal tissues are the supporting structures of the dentition. It should be our desire to see these tissues restored to health and preserved in that condition whenever possible. The better our periodontia teaching is carried out, the nearer will we be to realizing this ambition.

GRADUATE AND POST-GRADUATE TEACHING IN PERIODONTOLOGY

IRVING GICKMAN, D.D.S.,[5] *Boston*

As a preface to this presentation, I should like to make it clear that we are of the opinion that the periodontal care of the American public is primarily the concern of the practitioner of general dentistry.[6] The major responsibility for the teaching of periodontology lies in the undergraduate curriculum. The establishment of periodontology as a specialty cannot be hailed as a sign that the obligation of the general practitioner in regard to periodontal problems is diminished. If anything, the opposite is true. The existence of individuals with a primary interest in cardiology who limit their practices accordingly has not meant that medical schools have diminished their teaching of the anatomy and physiology of the heart and the diagnosis and management of cardiac dysfunction, or that practitioners of general medicine have discarded their stethoscopes. The need for training the general practitioner so that he can fulfill his responsibility to provide periodontal care for his patients, focuses attention upon a need for reorientation in the philosophy of dental education, and intensification in the teaching of periodontology at both the undergraduate and graduate levels.

As the teaching of periodontology moves in long overdue steps from relative obscurity in the pattern of dental education toward its proper position in the dental curriculum, we are confronted with a broad spectrum of needs in post-graduate and graduate training. In an effort to comply with the requirements of the dental profession, advanced training in periodontology has evolved at the following levels:

I. Refresher Courses in Periodontology

These courses are sought by general practitioners desirous of "keeping abreast" of current trends in dentistry. Our experience with dentists in refresher courses, older graduates and even those of comparatively recent years is revealing. It can truly be said "we have cast our bread upon the waters" and what is coming back to us is a shocking reflection of the type of training our schools with isolated exception have offered in periodontology.

A few refresher courses in periodontology were available as far back as 30 years ago but the major activity in the field has occurred in the past 10 years. Refresher courses are offered by dental schools, allied institutions and dental societies and vary in length from one day to two weeks. In the schools, the courses are usually presented by teachers of the undergraduate faculty and visiting clinicians.

In institutions with extensive refresher programs, the courses are of-

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[5]Tufts College Dental School.

[6]Glickman, Irving: "A Change in the Aims of Dental Education," *Journal of Dental Education*, 15, 109; 1951.

fered based upon the attractiveness of some particular phase of periodontology or the popularity of the clinician. Dentists taking several courses in the same institution are generally subjected to the repetition of a considerable amount of preliminary material in the development of the main theme of each course. It would be helpful if the refresher courses in periodontology were integrated so as to provide a coordinated, progressive curriculum. Such a program would minimize repetition, provide more effective training and facilitate efficient utilization of the practitioners' and teachers' time.

It is often necessary to attempt to conduct refresher programs on a "self-supporting" basis. Courses are, therefore, announced to the profession with the admonition that they may be cancelled if there are insufficient applicants. Because of the limitation of available financial support, this policy may appear justifiable. However, it is none the less a most undesirable situation.

Dental students nurtured on a preiodontally-deficient undergraduate curriculum mature as practitioners with a developmental anomaly—a "blind spot" for the periodontal needs of their patients. Only the more curious are likely to seek refresher courses in periodontology. It is true that in several institutions, the demand has warranted devoting a considerable portion of the over-all refresher program to courses in periodontology. The fact that this tends to occur in institutions with an appreciable undergraduate activity in periodontology is noteworthy. It may be attributed to the availability of teachers for refresher courses or to the stimulation of the practitioners by the enthusiasm and demonstrated value of the undergraduate periodontal program. However, in general, because of their educational heritage, various phases of restorative dentistry and surgery form the basis of most dentists' practices. Therefore, these are the refresher courses in which interest is more likely to be sustained.

If our schools are to assume the "franchise" for providing the profession with refresher courses in an effort to improve the calibre of dental care available to the public, we must accept the responsibilities inherent in such an undertaking. The profession has the right to expect that our programs will represent the crystallization of our most considered judgment regarding the spheres in which such training should be directed. It is not consistent with the best interests of the profession to conduct refresher training in a "department store" manner and provide only such courses as the practitioners' interests will support.

If dentistry is to be diverted from its inherent devotion to the restorative art, if the "periodontal blindspot" of the general practitioner, is to

be corrected, refresher training in periodontology will have to be presented in comprehensive integrated programs in accordance with the most critical academic standards. It is not feasible to initiate such programs within the framework of a self-supporting financial structure.

The signal accomplishments in post-graduate and graduate education in the past decade made possible by the stimulation and support from the W. K. Kellogg Foundation, testify to the industry of our dental schools. In some phases of dentistry, initially subsidized programs are now reasonably self-sustaining. Financial support is essential if refresher course training in periodontology is to attain the comprehensive scope required to make up, in some measure at least, for the inadequacy of undergraduate periodontal teaching in the past.

II. Post-graduate Courses in Periodontology

These are programs for individuals interested in specializing in periodontia and qualifying for certification by the American Board of Periodontology. With a few exceptions, these are full-time programs, one to two years in duration, leading to a certificate. It would be appropriate here to comment regarding the role of the specialty board and the educational institution in regard to the training of the specialist. Neither the schools nor the board should be satisfied to delegate the ultimate responsibility for the pattern of such training to the other. The function of the specialty board is not simply that of establishing requirements for certification. It should also serve to stimulate and guide educational agencies so as to attain maximum qualitative improvements in curriculum. However, the formulation of the educational philosophy motivating the specific features of the curriculum should be the responsibility of the educational institutions.

In the establishment of a post-graduate curriculum in periodontology, caution must be exercised lest the purpose and direction of the program be obscured in an abundance of insufficiently correlated information. The history of education serves warning that a quantitative increase in requirements is not necessarily synonymous with qualitative improvements in training. Periodontology has advanced beyond the stage where it should be overwhelmed by the novelty of newly revealed information. It is now challenged to examine such information with mature wisdom and apply it in the control of periodontal disease. A qualified expert should be marked not only by an accumulation of information but more particularly by a capacity to interpolate such information into practice.

In a post-graduate periodontal curriculum, the particulars relevant to the periodontium should be pyramided upon a foundation of generalities

provided by the basic and applied sciences of medicine and dentistry. The principles governing periodontal practice should be delineated from the fundamental generalities without sacrifice of the breadth of scope such generalities afford. A diagrammatic framework of such a curriculum is outlined in Table I. (See page 132.)

This is a two-year program with 50 per cent of the time devoted to clinical practice. Examination of the curriculum in a horizontal direction reveals that it is divided into three main spheres as follows:

I. Background Sphere—Fundamental Background Information
II. Periodontal Sphere—Fundamental Information Regarding the Periodontium
III. Clinical Sphere—Application of Relevant Information in the Prevention, Diagnosis, and Treatment of Periodontal Disease

Examination of the curriculum in a vertical direction indicates the interdependence of the various clinical phases of periodontal practice with the foundation of fundamentals.

Provision should also be made whereby students who develop special interests can have access to facilities and guidance for the pursual of original projects in the clinical field. This arrangement on a voluntary basis is an incentive to constructive thinking and critical integration of didactic training.

In the individual schools, post-graduate clinical activities in the various branches of dentistry should be coordinated. In many instances, post-graduate programs which are now well diversified, evolved from beginnings which consisted of training in a single branch of dentistry. As additional clinical subjects were added, each developed a vigorous activity within the physical and academic confines of its own department. As a result we are often confronted with the paradox of preparing better trained experts, but poorer clinicians. Young individuals who take advanced training immediately upon graduation from dental school are particularly vulnerable in this respect.

Post-graduate teaching should be conducted in a coordinated clinical unit which encourages the interchange of the clinical philosophies of the various phases of dentistry. The emphasis in such post-graduate clinical activity should be on the comprehensive scope of the trained experts, as well as upon the details of the particular phase of dentistry in which individual students are primarily interested. In such an environment the student will acquire a realistic perspective of the interrelation of all phases of dental service in addition to training in the management of problems which require a particular type of specialized care.

TABLE I—A SUGGESTED POSTGRADUATE CURRICULUM IN PERIODONTOLOGY

BACKGROUND SPHERE	Anatomy and Histology of the Oral Cavity and Associated structures.	Principles of Physiology, Function and Structure. Metabolism, Endocrines, etc.	Principles of Nutrition. Biochemical alterations in nutritional disturbances. Dietetics.	Principles of Pharmacology. Tissue response to drug and physiotherapy. Chemotherapy.
PERIODONTAL SPHERE	Histology of the periodontal tissues. The development of the jaws. The radiographic appearance of the periodontium.	Function in relation to the maintenance of the periodontal tissues. Physiology of of mastication.	The oral tissues in nutritional disturbances, with particular attention to the periodontium. Calculus formation.	The response of the periodontium to local and systemic drug therapy.
CLINICAL SPHERE Prevention, Diagnosis, and Treatment	The x-ray as a diagnostic aid. The inter-relation of orthodontic and periodontal treatment.	Evaluation and correction of occlusal disharmony. Occluso-Rehabilitation. Restorative dentistry and the health of the periodontium. Splinting.	Applied nutrition in periodontal practice.	Local and systemic drugs and physiotherapy in periodontal practice.
Principles of Pathology. Inflammation,degeneration, repair, neoplasma, etc.	Principles of Bacteriology. Pathogenicity of bacteria and humoral and cellular defenses.	Principles of Surgery.	Principles of Internal Medicine. The Case History. Laboratory Medicine. Psychosomatic Medicine. Dermatology.	Principles of instrumentation. Historical background of the development of modern instruments.
Histopathology of periodontal disease and oral pathology. Review of experimental studies pertinent to periodontal disease.	Oral Infection. Bacteremia and periodontal infections. The role of bacteria in periodontal disease. Allergy.	The repair of periodontal tissues in response to surgical and other treatment procedures.	Specific interrelationships of the periodontal tissues and systemic disease. Oral manifestation of dermatologic disturbances.	Selection of treatment techniques in relation to clinical disease.
The interpretation of clinical periodontal disease in terms of underlying microscopic changes. Local and systemic interrelation in the etiology of periodontal disease.	Oral hygiene Chemotherapy in relation to oral infection.	Surgical procedures in periodontal practice.	Periodontal recording. Laboratory tests in periodontal practice. The interdependence of systemic and local influence in the prognosis of periodontal treatment.	Sequence and evaluation of instrumental treatment procedures. Mechanical measures in periodontal prophylaxis.

III. Graduate Courses Leading to the M.S. or M.S.D. Degree

These courses are for individuals interested in specialized training with a view toward full-time or part-time teaching careers. For the graduate student, the two-year post-graduate program (Table I) should be modified so that 25 per cent of the time allotted to clinical practice is made available for research. The student is also encouraged to pursue an interest in one of the preclinical subjects. Pathology, bacteriology, and oral pathology are the fields to which graduate students in periodontology are attracted. The research activity usually consists of the exploration of some periodontal problem in terms of the scientific discipline in which he has become interested. The graduate student represents our most fruitful investment in the progress of periodontology. Every opportunity for development should be made available to him.

Because periodontology is an expanding activity in an educational system already plagued by a short supply of teachers, the urgency of the need for periodontal teachers is accentuated. It is frequently difficult to maintain a minimal undergraduate program. Weakly-lined chains of "half-day-a-week" visiting instructors are called upon for heroic attempts to provide the constructive educational policy and continuity of teaching that only full-time and half-time faculty can provide. Existing personnel have been utilized almost beyond their effective teaching capacity, and at the expense of inadequately manned undergraduate staffs in order to conduct some semblance of a post-graduate activity.

The unavailability of suitable teachers is a real barrier to the development of advanced training programs even in institutions where the wisdom of such an undertaking is recognized. On the other hand, it is by the development of such training facilities that a source of potential teachers will be created. Specific action is required to alleviate this obvious impasse. The timing and pattern of such action and the resultant benefits to dentistry are clearly defined.

Too high a priority cannot be given to the immediate need for the subsidizing of post-graduate and graduate periodontal programs in schools in a position to undertake such development. Nor can such programs be expected to serve their purpose without provision for attractive fellowships for teachers-in-training.

The teaching of dentistry at the undergraduate level must be changed so that it actually presents the care of the supporting structures and various phases of restorative dentistry as equivalent features of dental practice. Such a shift in the emphasis of undergraduate teaching will stimulate an interest in periodontal care in the mind of the dental student, encourage a healthy demand for post-graduate and graduate training,

provide better candidates for such training, facilitate the development of teachers who can serve at both the undergraduate and graduate levels and ultimately foster more critical standards of periodontal teaching which will be reflected in improved service by the profession.

The recent Report on Graduate and Post-Graduate Programs in Dentistry, 1952-53, prepared by the Council of Dental Education (not including reports from all dental schools), indicates that out of 27 dental schools and allied institutions with graduate and post-graduate courses, eight offered graduate training in periodontology, and post-graduate training was available in eleven. This is a notable improvement over the status of advanced training in periodontology of ten years ago. However, there is a fallacy in relying upon super structures of advanced training in periodontology to compensate for inadequacies perpetuated by the undergraduate foundations upon which they are built. It is axiomatic that the development of graduate and post-graduate teaching in periodontology and improvement in undergraduate periodontal teachings are interdependent movements.

It is unfortunately too easy to view the inner rumblings in educational circles regarding the prevalent unawareness of the real significance of periodontal teaching in the undergradate curriculum simply as the desire of another branch of dentistry to seek its place in the sun. Such rationalization may afford some solace for perpetuation of the supremacy of restorative dentistry in our educational philosophy. However, its effectiveness in the prevention of tooth loss from periodontal disease remains to be demonstrated.

METHODOLOGY IN THE TEACHING OF PERIODONTOLOGY

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The University of Michigan recently conducted a workshop in periodontology at which gathered a large number of interested people whose purpose was to determine "what is fact and what is fiction in periodontology." This earnest endeavor was fruitful and emphasized to those of us who have the responsibility of teaching the subject, the necessity for educating the minds of our students as well as impregnating them with accumulated facts gained from the weighted experience of the past. It is far better to produce a student with an open and analytical mind toward our problem than one solely created in the form and image of his instructor. We all realize the necessity for correlation and application

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of the basic sciences in our teaching of clinical subjects but our problem is to consummate it.

Periodontology has the outstanding opportunity in our curriculum to accomplish this function and more and more we must insist that our teachers in this subject have special training in the applicable basic sciences. These teachers must also develop the knack and ability to stimulate their students in evaluating the problem at hand and the application of factual information to it. Dr. Benjamin Libet, on our campus, has recently pointed out that there are five teaching objectives to be considered as a goal in medical-dental teaching. They are:

1. To teach the ability to marshall information; this would include a knowledge of relative basic facts and principles and the ability to seek out related information from the literature.
2. To teach the ability to apply facts and principles to new problems, which would include the most probable cause or causes and the best course of action or treatment planning on this basis.
3. To teach the ability to apply the scientific method to any problem, this includes the ability to make accurate and adequate observations, to formulate hypotheses, to formulate warranted conclusions and to recognize those assumptions which are implied but are necessary to complete a chain of evidence.
4. To teach the ability to deal with the sociological and economic aspects of patients.
5. The ability to continue self-education throughout the professional career.

This is a big order, I realize, but it is the direction our teaching must take in order to meet the demands put upon our profession by its patients and the allied professions. The correlation of the basic sciences must, of necessity, be a combined effort between the applicable basic sciences and the department of periodontology. This can be accomplished by frequent conferences between the teachers in periodontology and those in anatomy, histology, physiology, biochemistry, pathology, bacteriology and pharmacology. These conferences should culminate in a meeting of the minds of the teachers concerned and especially should the basic science teachers be apprised of the demands of clinical problems, the deficiencies of the students and a study of the techniques of correlation. Frequent conferences of this sort will enhance the knowledge of the teachers of periodontology in respect to the particular basic science and will stimulate the interest of the academic teachers.

Having laid this foundation for correlation, the next step is to bring the student within its orbit. This should be done early in the curriculum and can be accomplished by selecting one or two of the applicable preclinical sciences, as a beginning, and cooperating with them in some kind of exercise. For example, during the course in bacteriology small groups of students can be assigned during the bacteriology laboratory period to

the clinical facility of periodontology and there allowed to observe and examine selected patients with periodontal disease. The condition of each patient should be adequately described by the clinical instructor and questions pertaining to the problem solicited and answered. Then as part of the exercise the student can take required smears and cultures from these specific patients and return to the bacteriology laboratory for further study of this material. This kind of device accomplishes two things; it begins to familiarize the student with oral disease and it adds a clinical interest to his basic science study. Obviously a similar procedure can be worked out for almost any of the preclinical sciences, with modifications to fit the individual problem.

At the same time, in the lower division, beginning teaching in periodontia should consist of familiarizing the student with the normal appearance and condition of the oral cavity and structure of the periodontium. This can be accomplished by having the student perform the techniques of oral hygiene and prophylaxis on patients requiring this service. The teaching here should be directed toward familiarizing the students with the normal picture and lead him into an appreciation of the significance of changes which might indicate pathology. Use of laboratory mannikens has some value, if properly constructed, but I think it is possible that in the dental curriculum we may place too much emphasis upon these devices.

In the upper division the combined formal and clinical teaching in periodontia should take place. Here we begin to bring together everything taught within the scope of this field, and we begin to accomplish the first requirement in the teaching program, that of marshalling information. The formal lecture is still an important technique but it must be used as a coordinating forum of factual information and introduction to controversial opinion. I think that it is important now, in the teaching of periodontia, that a good text book be used as an adjunct to the formal lecture. A complete outline of the lecture program, with definite assigned reading, will serve to familiarize the students with the concensus today and the lecture period should be devoted to clarifying the various concepts with a stimulation of thinking along ideas for the future. Periodic quizzes, both oral and written, will serve to advise the instructor of the learning pattern of his students and also guide him in misconceptions which have crept into the formal training.

Throughout the lecture program the correlation again of basic sciences must be brought to bear and this can be well executed by the use of visual aids. It is also a good plan to have set up in the Periodontia facility, microscopes, with material pertinent to the current lecture and with

invitation to the student to peruse these at his leisure. This device affords the opportunity for individual discussion, on an informal basis, when the student presents himself for this exercise. It is also a good plan to intersperse the lecture program with guest lectures, from outside the faculty, in order to project the student more readily to his future position.

The therapeutic skills, along with clinical judgment, are probably best taught by a combination of group demonstrations and individual instruction in the general clinic. Here, the individual members of the periodontic staff are the crux of efficient teaching; upon their shoulders rests the responsibility of teaching the ability to identify cause and causes, to evaluate a proper treatment plan and to teach the skills necessary for treatment and control. This means that there must be a constant alertness on the part of those charged with the responsibility for this teaching, to stimulate the staff in inquisitive teaching. One of our great faults, in dental teaching is the misconception that clinical staff members are responsible only for checking results on the basis of right and wrong rather than developing the student's mind along with his technical skill.

A workable program of clinical and seminar teaching can be presented in the following manner. At the beginning of the first semester the junior class can be divided into groups of not more than ten students and demonstrations conducted with selected patients on the indications for and the execution of subgingival curettage and paliative measures. Several members of the periodontic staff should take part in these seminars, coincidentally, so that the teaching can be coordinated and the student can observe some variations in approach. Subsequent seminars can be held to demonstrate the effectiveness of the therapy in individual cases as they progress. At this time the evaluation of the response of the individual patient to treatment can be taught. The student here begins to learn clinical judgment and experience. Indications for further therapy can now be illustrated. In a semester of 16 weeks, with 60 students, 12 such seminars would cover this initial project. Coincidentally, each junior student should be assigned to patients with periodontal disease of mild to moderate severity and individual instruction given him, in the execution of the technique employed. This should be conducted in the general clinic and the instructor should be encouraged to do group teaching with other students learning the same procedure at the same time.

In the second semester of the junior year a similar series of seminars can be conducted, demonstrating the more advanced techniques of curettage surgery and so on. Coincidentally again patients should be made available in the general clinic, for the execution of these techniques,

under individual instruction. In this manner the student should be able to begin his senior year with a background of instruction and evaluation in the major therapeutic procedures.

At the beginning of the senior year each student should be assigned to carefully selected patients, whose periodontal disease, in most instances, represents as many of the problems as possible. For purposes of administration these can be called Special Assignments and the students should be obliged to carry through the entire periodontal therapy, including oral diagnosis and nutritional survey. This should be done under the coordinated teaching of the entire staff but with one instructor responsible for the overall evaluation and execution of the plan of treatment of the case.

During the first semester of the senior year seminars can again be conducted for small groups to demonstrate the evaluation of and indications for more advanced techniques in subgingival curettage, surgery and occlusal equilibration. This last is more effective now since the student has more background in restorative dentistry and enhanced clinical judgment.

In the last semester of the senior year, patients previously handled by the students in either the junior year or early in the senior year, should be seen by them on recall and proper evaluation of the previous treatment made, under the guidance of the instructor. These completed patients should be demonstrated to as many students as possible. Here, again, as throughout the clinical teaching, the importance of patient's response as an individual barometer of the total health picture should be pointed out to the student. The important technique of educating the patient in the procedures of home care should be taught the student individually, with emphasis on the problems the patient presents. Instructors should be trained to point out to the student individual requirements of the patient and the method of instruction to be used, so that the greatest good can be obtained from this valuable adjunct to periodontal therapy.

The importance of the correlation of basic sciences is only equal to the importance of correlating other dental teaching with periodontia. Instructors in periodontia must be continually alert and informed concerning the teaching practices and concepts of the other divisions in the school clinic. As it is every dental teacher's responsibility to teach an overall approach to oral disease, it is particularly so with those teaching periodontia. We must guard against this fault of becoming too departmentalized in our curriculum and especially in its clinical activity, since

the student must obviously be trained to meet the patient as a complete entity.

A device which has served us well, in this regard, is what we have chosen to call a "Treatment Planning Clinic." To this clinic are sent patients with complicated dental problems, necessitating a comprehensive treatment involving most of dentistry. The attending men in this clinic are the chairmen of each clinical division and the patient's problem is reviewed from all aspects and a consummate judgment and treatment plan finally evolved. Students are present during these clinical conferences and gain from the discussion and opinions of the various teachers involved. The student is urged and encouraged to ask questions and to formulate his own judgment of the same case, and in this way teaching of a comprehensive nature toward the resolution and institution of a proper treatment plan is afforded.

The problem of grading is as important in periodontology as in any other field of teaching and should be approached from the standpoint of evaluating the teacher as well as the student. We must guard against the fallacy of creating in the student's mind the grade complex. Students who work solely and entirely for grades will not be a credit to our profession. Informative grading can be accomplished very well by resorting to comments and explanations of the student's short-comings as well as his merits. The coordinator of the teaching then is able to learn what each individual student needs to bring him to the proper level of knowledge as well as what the staff needs to do in order to improve its teaching. In the seminar discussions separate grade cards can be issued by the staff members, in order to evaluate attention, curiosity and individual thinking as elicited from the discussion group.

History and examination records are important in teaching the student the overall picture of diagnosis, but in my opinion, it is more important to draw the student out, in his own observations, than it is to produce an elaborate check list of items which he might approach mechanically. I think that in the past the teaching of Periodontia has been guilty of evolving very complicated and comprehensive records, which have inundated the student with laborious work, which he approaches as a task rather than a fascinating problem. I think our teaching records should be of such nature that the salient features and important facets, of the clinical examination and the patient's history, should be properly recorded but that in the main this should be done in the students own words and in his own interpretation. We are preparing men to take their place in the active profession and our teaching should be projected along the line of familiarizing them with the compilation of necessary material

but also to provide them with a device and a means which they will carry out in their own offices. Complicated records, I am afraid, are seldom carried to active practice.

In periodontia the teaching of the appreciation of and need for research must be a continuing project. Since our field is by no means an exact science we must continually encourage the student to formulate his own hypotheses and then to pursue them along the lines of the scientific method. It is possible to assign library research projects to groups of students requiring subsequent reports as part of a discussion session. These reviews of the literature can be conducted by the students with the teacher acting only as a moderator. This kind of encouragement of individual thinking can stimulate research in later years. The teacher of periodontia must of necessity keep himself fully abreast of the pertinent research going on in the country and the world, and continually make an effort to apprise the student of the various approaches and ideas held and pursued by other workers in the field. Only by inspiring our students toward continuing study can the ultimate goal of prevention be approximated.

There has been much controversy in the past concerning more time in the curriculum for periodontia and its proper recognition in each school. It is my opinion that periodontology has now become of age and will continue to be emphasized more and more. There are countless places in our present curriculum where the teacher of periodontia can insert his influence and accomplish effective teaching without an additional time assignment. After all, periodontic training is training in an appreciation of all of dentistry and the conscientious teacher of periodontia can elicit cooperative teaching from all the divisions and thereby enhance his own.

Throughout this discussion I have emphasized the importance of the individual teacher in the methodology of teaching. This obviously cannot be over-emphasized. In the last analysis we have a job to do in training our teachers of periodontology as well as our students. Methodology, devices, teaching techniques and organization all go for naught unless the teacher is a student and loves to teach.

INTERRELATIONSHIP BETWEEN THE BASIC SCIENCES AND PERIODONTOLOGY[8]

HAMILTON B. G. ROBINSON, D.D.S., M.S.,[9] *Columbus*

For many years, basic sciences and dental science developed with little integration. An "iron curtain" was often drawn between the "preclinical" and the "clinical" years. A few decades ago the interrelationships between basic sciences and dental practice became evident to a few pioneering souls. If one were to read the proceedings of various dental education groups during those times it might appear that a renaissance had occurred. Unfortunately, until very recently, few holes were found in that iron curtain which fell at the end of the second year of the dental school curricula. The term "biological concept" was bandied about. In some institutions a solid core of teaching developed in clinical areas relating the information gained in preclinical sciences to patient care. In too many institutions, the biological concept served chiefly as window dressing.

Not all clinical dental subjects lend themselves to broad utilization of the basic sciences. I hasten to add that *some* of the basic material can be used to advantage in every dental discipline. If periodontics were practiced as a series of manual operations learned by rote and repetition of exercises, it would be of little avail to discuss the importance of basic biological sciences to periodontal education. There are probably no dental schools, today, where periodontal disturbances are not considered as diseases of the gingiva, periodontal membrane, cementum and alveolar process. To intelligently treat these periodontal diseases one must have an understanding of certain basic principles.

Oral and general histology are essential to recognition of the tissues involved in periodontal treatment and prevention of periodontal disease. The student who recognizes tissue cells and tissue organization is in a position to understand the attachment apparatus of the tooth. He can evaluate the importance of the periodontal membrane as a periosteum of the alveolar bone and cementum; he can understand the "hydraulic press" and "snubber" action of the periodontal membrane; he can justify the presence of pain in some types of periodontal disease and its absence in others; he can visualize the formation of the epithelial attachment and its ageing. Armed with these concepts, which he gained through basic

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[8]Presented at the American Association of Dental Schools, Philadelphia, Pa., March 23, 1953.

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science and periodontal teaching, he is better able to understand the disturbances of the periodontium that may lead to tooth loss and he will evaluate radiographs on the basis of tissue topography, not simply as shadows in a film.

From biochemistry and physiology, the dental student should bring an understanding of the vital processes that lead to proper development and maintenance of the periodontal tissues. The basic actions that lead to formation of tissues are discussed in modern courses in biochemistry with the understanding that biochemistry is an integral part of dentistry and that the human body is applied biochemistry. The subject is no longer taught as a mental exercise unrelated to the human tissues. Likewise, in physiology, the student learns of vital processes as they occur in man. Woe unto he who depends on pseudo-scientific twaddle in lecturing to the well-informed student.

Physiology and biochemistry not only teach the applications of their principles in body metabolism but give the future dentist a well rounded concept of the processes of nutrition and hormonal activity in health and disease. When the clinician discusses the effect of endocrines and nutritive factors on the periodontium he must be on firm ground. Bungling errors will lead to loss of faith even in that portion of the teaching material which is authentic.

Bacteriology and immunology lay an invaluable background for periodontics. The oral cavity, as a natural incubator and selecter of microlife, challenges the best bacteriologists. There have been free and easy discussions, often on the clinical side, of specific types of bacterial gingivites. For the student who has any concept of the symbiotic and antibiotic relationships of the oral flora these bland statements of specificity are puzzling. Nor is the young individual who has more than a speaking acquaintance with bacteriology and immunology impressed by therapy directed at elimination of bacteria from their habitat, when conditions in which the organisms prosper are left for rehabitation.

Pathology offers the student a recognition of the important processes involved in disturbed growth, including neoplasia, in degenerations and in the protective inflammation. Since the diseased tissues with which he works as a periodontist are influenced by one or more of the pathologic processes, he must have a ready comprehension of their action and their purposes. It is not easy to convince one trained in pathology that a drug which reduces the useful activities of inflammation is of value in treating a gingivitis or periodontitis in the presence of physical and bacterial irritation. However, a student who comprehends the basic principles of

inflammation will readily grasp the importance of elimination of cause as the way to prevention and cure.

Pharmacology is utilized by the student in periodontics, both in understanding what drugs to use and when drugs are valueless. Here in the clinic is the "laboratory" application of information gained through didactic education.

It should be evident that periodontics offers an opportunity to apply concepts learned in the aforementioned and other basic disciplines. The clinical teacher must aid in breaking down the iron curtain—the idea-proof door—at the end of the "preclinical" years. However, this is not a one-way movement. The teacher of preclinical subjects must learn practical examples and, more important, the usefulness of his subject to the clinician. Stilted examples only lead to disillusionment. A genuine understanding is necessary. It is not intended that all basic sciences should be taught by clinicians, nor that all clinicians should be accepted authorities in basic fields.

I have long believed that, ideally, teachers from the clinical areas should be trained in some basic sciences. Rather than taking a Master's degree in periodontics, the future clinician should major in a preclinical science so that he might help to make his clinical branch a derivative science. Periodontics offers an ideal area for clinical application of bacteriology, oral histology, or oral pathology and, to some degree, for utilization of biochemistry, physiology, and pharmacology. With graduate dental students or dental teachers in the basic science departments, and a realistic approach to basic science teaching, the clinical application of those sciences will come naturally and not as a hypocrisy.

OBJECTIVES OF AND TRENDS IN TEACHING OF PERIODONTOLOGY

WILLARD C. FLEMING, D.D.S.,[10] *San Francisco*

Last year the Section on Periodontology held a panel discussion on this subject. The panel participants were Drs. Joseph Jacobs, Milton Engel, E. F. Allen, W. G. Shafer, Harold Ray, Henry M. Swenson, and W. C. Fleming. Originally it was planned to have the panel members discuss and try to reach common agreement as to just what the teaching objectives were. However, in the correspondence that was carried on prior to the meeting, it was discovered that we could pretty well agree on the objectives, but could not agree on how to attain them. As a result, we developed the accompanying chart (p. 145). The panel then

[10]Dean, College of Dentistry, University of California.

limited its discussion to the attainment of these objectives. It is no exaggeration to say that the panel was not in complete agreement on the methods of attaining these objectives. The chart you have before you was developed with its four columns resting on a base of preclinical sciences. Please note that we considered the subjects in the base and the subjects in the columns as capable of moving in either direction. It was the unanimous opinion of the group that emphasis on this "two way street" idea was one of the major objectives of teaching of periodontology. The panel is rather proud of this chart and hereby challenges any of you to find an important objective that is not included.

It was obvious to us and must be to you that it is relatively easy to determine and agree upon the objectives in a teaching program of periodontology. It is equally obvious that the difficult thing is the attainment of the objectives.

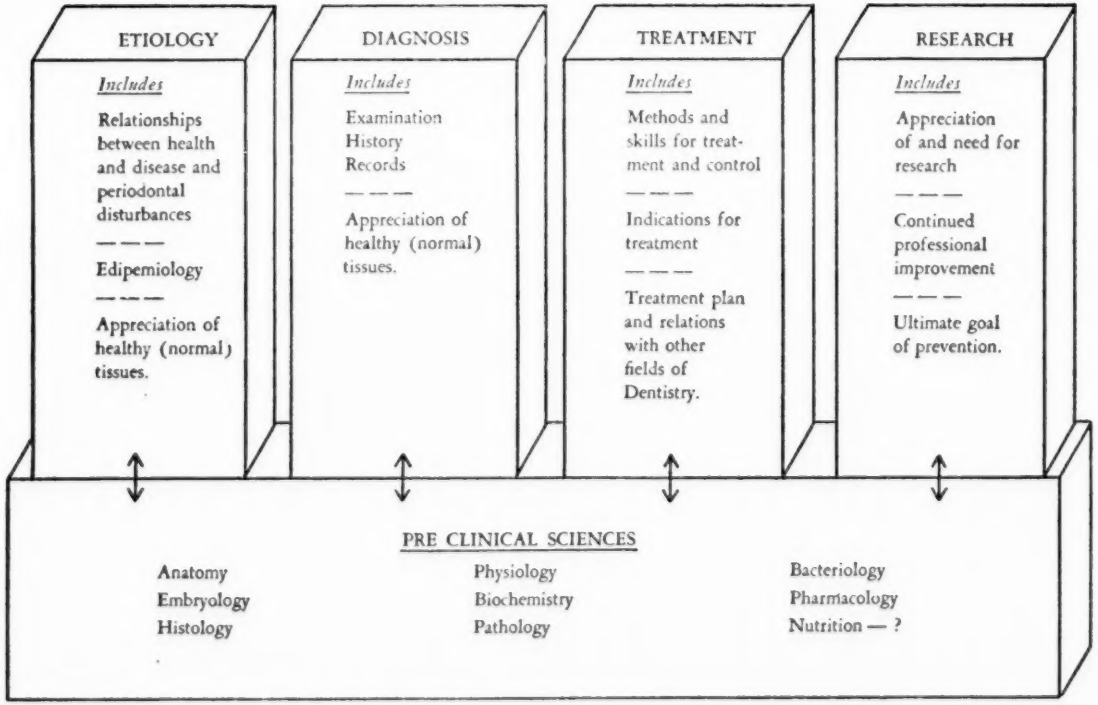
Of course, the first point that will be raised is the need for more time in the dental curriculum. One grants that this is a legitimate claim and just as legitimate for about every other division as it for periodontology. Peridontal teachers generally approach this problem of more time in two ways. One way is by recommending a fundamental change in the philosophy of dental education. Irving Glickman, in the January, 1951, issue of the *Journal of Dental Education*, has an excellent article along this line.

Another approach is to hammer on the door of the curriculum committee and the Dean's Office. An example of this took place three years ago in the Section on Periodontology of this association. The section in all seriousness passed resolutions urging the following:

1. That the state boards of dental examiners include periodontology in their examinations;
2. That the deans of the dental schools send at school expense selected teachers to qualified centers for graduate work in periodontology;
3. That the deans reorganize the whole curriculum, looking toward the total welfare of the patient;
4. That the deans emphasize that the technics of dentistry should be the means to an end, and not an end in themselves;
5. That the deans arrange that the students see the end results toward which their technics have been directed;
6. That the deans see that the patients have an appreciation and an understanding of the services rendered;
7. That the deans organize the members of the teaching staff so that all teachers cooperate in presenting teaching material as it relates to periodontal health and disease in such a manner that each department's part augments the instruction of the other.

As unofficial spokesman for the Protective Association of Dental Deans,

OBJECTIVES OF A TEACHING PROGRAM IN PERIODONTICS



I felt called upon the following year to express our appreciation for the interest and suggestions, and also our gratitude that we were not requested to settle the problems in Berlin, Korea, and Indo-China.

Educators who are dealing with course approvals and other curriculum matters are well aware of the desire of teachers of all subjects either to find "A place in the sun" or to hold on to what they have. It is an age old desire and is as intimate a part of man's makeup as his need for oxygen. It is not limited to individuals, nor to any particular group of individuals. Nations have it, as well as smaller groups, as may be witnessed in many town and city expansion campaigns. Individuals have it to such a degree that I am inclined to place it somewhere between the instinct for self-preservation and the instinct for reproduction. This striving for "A place in the sun" or more living space by the dental teachers goes under a variety of names, depending upon who is doing the name-calling. By some it is designated as laudable ambition, or zeal. By others it is labeled as selfishness or manifestation of inferiority or frustrations. The terms "radical" or "reactionary" are associated with this problem. The phrase "dog in the manger" is a familiar description of those who refuse to yield a spot in the sun, and "entering wedge" is the description of those seeking entrance. Both sides use the dog analogy in describing the opposition, but probably out of courtesy place the blame back at least one generation.

It might be interesting to review briefly the developments which form the background of periodontology's present position. In my opinion the following items are some of the reasons why periodontics stands with only one foot in the door of the dental curriculum:

1. Restorative dentistry arrived on the scene first and periodontics is a "Johnny-come-lately" in dentistry and the dental curriculum;
2. Caries and the results of caries are acute, dramatic, painful and not subject to delaying action, whereas the opposite might be said of the diseases of the periodontium;
3. Formerly, the dentist, just as the physician, was concerned mainly with the relief of pain and the restoration of function. It is only lately in both dentistry and medicine that attention is being given to the chronic and degenerative conditions;
4. Dentistry has worked out a precise and definite method of diagnosing and classifying caries and has developed precise and widely accepted indications for treatment. The treatment is successful, the pain is relieved, function is restored and the condition is subject to control. In periodontics the etiology is considered by many to be vague, diagnosis is complicated, and there is no generally accepted classification. There is a great variety of treatments, and combination of treatments, and the indications for treatment are still the subject of indecision and controversy.
5. To a merchandise-minded public, dental restorations represent tangible evidence of a service performed, whereas in periodontics the hours of time involved in

examinations, history taking, nutritional surveys, diagnosis and "cleaning teeth" represent little or no tangible evidence of service to the patient. In other words, it is easier for the dentist to justify fees for merchandise than for service. In view of changing attitudes one wonders if such dentists are not "reaping a whirlwind."

6. Many of the dentists practicing and teaching today were attracted to dentistry because they were interested in a career that offered a service that is definite and precise, and predictable. The diagnosis and treatment of caries satisfies this desire. Periodontics does not.

Many of us believe that the objectives of undergraduate education include teaching the student the basic health sciences and basic clinical technics and their application to clinical practice. Our present concept of the best teaching method is to have the student apply these basic sciences and basic technics in the clinic by actual performance on patients. Many of us believe that the organization of the modern dental curriculum and the allotment of time in the allowable 4400 hours of instruction does not allow us to prepare the student properly to appreciate or practice periodontology after graduation.

It strikes me that if we are to be realistic we must recognize that any increase in the physical time in the curriculum will be difficult and long drawn out and that we might seek our objectives as periodontal teachers by a plan of integration with other courses of instruction. Let us take up the major headings on the chart one by one and see how the objectives might be attained.

Preclinical Sciences

The attainment of this objective will depend largely upon an attitude of mind of the dental faculty in general and the science training of a few in particular. This can be accomplished by close cooperation with the preclinical sciences. The periodontal staff will meet no resistance in the basic sciences in their request for cooperation, but it will require time and effort on the part of the staff members in attending the science courses and the science staff meetings to enable them to point out to the science teachers the need for emphasis in this and that area. It will not be accomplished by reading a book on biochemistry or bacteriology, but will require actual spade work with periodontic teachers auditing the science courses and learning for themselves what is being taught in the courses. The application of the content of these courses in clinical teaching will be come more apparent and they will be in a much better position to advise and steer science courses toward a better preparation of the student for the clinical years. This objective has been accomplished already in many schools in the field of histology and at least one school has developed a very successful coordinated program with

the department of biochemistry. A similar approach is now being started in the same school in bacteriology. It does take time and it does take effort and the initiative lies with the periodontic staff.

Etiology

Here, with the exception of a short time that might be spent in epidemiology, this objective may be reached by instruction in courses not necessarily labeled periodontics. Pathology, dental medicine, nutrition, can all cover this area with the periodontist simply identifying and emphasizing their relations to periodontal tissue and periodontal disease.

Diagnosis

The problems of diagnosis are the same for caries, cancer, periodontal disease. Clinical experience in the application of the principles of diagnosis to periodontal cases is necessary. There is no reason why relatively few cases will not provide opportunity to illustrate there principles. The technics of examination, history taking and record making need not be taught over and over again as it is in many schools today. These principles need simply to be applied in the various areas of dentistry.

Hand in hand with this program should be the development of a weekly or bi-weekly general dental diagnostic seminar built along the same lines as many of the tumor clinics in our medical schools. Here patients with problems ranging from neoplasms, temporo-mandibular-articulation problems to gingivitis and rampant caries may be presented once a week. These seminars should be designed primarily for the faculty and attended by members from all departments. Patients should be presented with their case reports. Examinations, and consultations may be carried on by those concerned, with diagnosis and indications for treatment as the objective. Attendance by members of the basic science staff will give them the opportunity to discuss the cases and observe the problems of the clinical teachers. No group will have a better opportunity than the periodontic staff to put over their ideas and problems to the other departments in the school in a seminar of this kind. Here again the initiative of such a program will lie within the province of the teachers of periodontology. Which chairman should administer such a seminar would be determined by each school.

Treatment

This subject, in my opinion, is largely the responsibility of the periodontic staff. The objectives in this area cover not only the teaching of the various methods and skills, but also the indications for treatment.

What are the indications for subgingival curettage? When is gingivectomy indicated? When is occlusal equilibration indicated? It would appear that these areas are important enough to command most of the periodontist's time. Unfortunately, many of the periodontists spend hours of time by dividing into camps of conservative treatment and radical treatment and by defending these camps with endless discussions of minute changes in techniques. How much better it would be to develop workable ideas and classifications showing the indications for each method of treatment rather than to spend time and energy defending each method. Terminology has almost reached the status of a fetish among periodontologists until one suspects they have little else about which to talk. I have no quarrel with proper usage of words, but I do suggest that there are other important subjects that have a higher priority on our time.

Treatment planning and relations with other fields of dentistry can be accomplished in a variety of ways, ranging from informal discussion with staff members of other divisions in the school to the development of a treatment planning clinic where the treatment of complex cases are discussed in the presence of students by representatives of the various divisions in the school.

Research

The last objective labeled research means that the periodontal teacher should emphasize the appreciation of and the need for research in periodontology, as well as the need for continued professional improvement after graduation. Here again one does not envision a course for this objective, or even a lecture on the subject. In my opinion this objective can best be attained by the entire attitude of the faculty and the atmosphere of the school. Teachers should be engaged in research and investigation. These activities will inevitably be made apparent to the student in a variety of ways. Even the simple employment of a student as a student assistant in the research laboratories is a step in this direction. One would rather see a student earning money washing test tubes and beakers in a research laboratory than pearl diving for cups and saucers in a restaurant. Lively up to date lectures as an adjunct to reading assignments that include the latest developments in research create an awareness of the value of research far better than any stereotyped lecture on the subject. The value of continuation studies is apparent to the undergraduate if refresher and postgraduate courses are being offered in school. The presence of students at local and state society meetings emphasizes the value of continued professional improvement.

Summary

In summary this paper has offered the objectives that were presented last year at the meeting of the Section on Periodontology and has discussed more the attainment of these objectives, rather than the objectives themselves. I have attempted to point out that the interplay of the clinical and preclinical sciences is to some extent an attitude of the entire faculty which can be aided and abetted by the development of liaison members of the various staffs. The areas included under eitology and diagnosis, in view of our limited time schedule, do not need special courses of instruction but simply the application of the basic principles of these subjects to the special field of periodontal disease. Treatment is essentially a problem of the periodontal staff. In my opinion the methods and skills and indications for treatment should have a high proportion of the periodontal teacher's time, with a minimum amount of time for discussing terminology and detailed defense of specific types of treatment. Research and continued professional improvement is an attitude perhaps best taught by precept and example, than by formal course lectures.

In other words, what we should strive for in the teaching of peridontology is a course of instruction on a vertical basis in the curriculum and not as a series of horizontal hurdles as it has been taught in the past.

Conclusion

There are many thing to be accomplished in dental education and I, for one, grant a high priority to the needs of periodontology. The above suggestions will provide the framework for a smooth, coordinated program. Periodontology taught vertically in the curriculum will improve the application of the basic sciences in the clinic. The general diagnostic seminar will provide the basis for a better understanding of periodontic problems by all departments. One recognizes that there are many other needs, such as a properly qualified staff and adequate facilities which have already been mentioned. However, a start must be made and it would appear that the two steps, a vertical curriculum and a sympathetic, informed faculty are at least a foundation upon which to build.

Conditions vary in the different schools. There are the vested interests of the various departments. There is inertia, self-satisfaction and plain human orneriness. However, these exist in any event and will not be overcome by the passage of resolutions and wishful thinking.

The entire history of dentistry is the story of a struggle up from vocational status to true professional standing. The objective was attained by hard work and sustained effort. If there is such a thing as a self-made

profession, it is dentistry. Our dental forebearers knew in their hearts the ultimate value of oral health and were willing to work for its "place in the sun." I fully believe that periodontists as a part of that profession have the same sense of value of their subject and are capable of the same performance.

In conclusion I must admit that I have been critical, but what I have said about periodontology I have said about myself. My major interest in teaching, research, and practice has been in periodontology and at least I can say that the comments made here today are from one of the family and not from an outsider.

Lex Est Reexire Ad Membrum

Teachers Learn from "The Faithful Mule"

In history and poetry, in music and in art, the horse has been a favored beast and played a leading part; and while I don't begrudge him the fame that he has won, there's been too little said about his sister's long-eared son. We praise the foaming charger and we weave him in a song, but how about the humble beast that hauls the grub along? He snakes the heavy cannon over muddy field and road and is never known to whimper or complain about his load. In time of peace as well as war, the mule is not a shirk, when Dobbin takes a balky spell, it's Jasper does the work.

In many ways he proves himself much wiser than the steed, he never takes an overdose of water or of feed, and should he chance to run away, when by ambition fired, he always makes his dash with care and stops before he's tired.

I know there is a prejudice against this humble beast, but those who hold him with disdain are they that know him least. Investigate his record with a calm unbiased mind, and you will find, as I have found, that he has been maligned. For even men who hold him up to scorn and ridicule, might learn a wholesome lesson from the humble, patient mule.

—The Printsmith.

ARE WE DOING OUR JOB?[1]

MILLARD E. GLADFELTER, Ph.D., D.Sc. in Ed., LL.D.,[2] *Philadelphia*

Perhaps I could have worded my topic to give it more academic flavor. I might have told you I would talk on "A Prognosis of Tendencies in the Educational Process." But I prefer the less elegant phrasing. Our problems today are hard enough even when expressed in the simplest terms. We can hope to solve them only by making them understandable to people on every level who are being touched by them.

Education, like every other service to society, meets its problems by trying new ways of doing things. If in that process it burns out the pocketbooks and the patience of the taxpayers and benefactors without making commensurate return, it should be told about it in plain words. And it will be, make no mistake about that.

Almost every man regards himself as somewhat of an authority on education. He went to school himself. Anywhere from ten to twenty years of his life were spent in the formal process of getting an education. Now his children are in school; or they finished school not too many years ago. He knows what is going on or he thinks he does.

That is a natural attitude. The schools serve almost everybody and they will inevitably be under close and constant scrutiny. That the verdict will always be favorable is too much to expect.

In the last year or two, local schools have been under fire in a number of cities, and whole communities have been divided in bitter dispute. As a rule, investigating committees investigate, majorities submit majority reports, minorities submit minority reports, and rancors disappear only with the passage of time. Sometimes religious instruction is the issue; sometimes use of radical propaganda is alleged; sometimes educational method and philosophy are attacked. Burdens of complaint are: children have too much homework; trivialities take up most of the time at school; moral supervision is lax; Susan can't spell; George can't make change, and neither one has any respect for authority.

In Atlantic City recently bus drivers went on strike to protest the rowdiness of high school students on their busses. This provided a text for foes of public education from coast to coast. That all of us as parents have responsibilities in such matters escaped many of these critics.

Even so, the overall result of such tumult is beneficial. The educators

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[1]Presented before a general session, American Association of Dental Schools, Philadelphia, March, 1953.

[2]Provost, Temple University.

concerned are distressed. The controversies are likely to engender more heat than light. But at the same time it is wholesome for any institution to be forced to check and recheck its premises in the presence of those it serves.

Now let's get above the ruck of contemporary events and try to view our problem whole. We need perspective. We can see where we are going only by looking back to see where we came from.

First, let us look back to eighty-eight years ago this spring when soldiers of the Union armies marched home from Appomatox Court House. A grateful government gave to those who wanted it acreage in the west for a homestead. "Forty acres and a mule" was the cry of the day, and thousands of young men fanned out through that vast territory to stake out their claims.

Eighty years later American men came back from another war. This time there were millions of them, and they returned victorious from almost every corner of the globe—England, Germany, France, Italy, North Africa, Greenland, Alaska, Japan, and the South Pacific. Again a grateful people did them honor and gave to those who wanted it not free land, but free learning. An avalanche of youth, such as the world had never seen, swept to the doors of America's colleges and universities seeking knowledge. They are gone now, most of them, but America will hear from them in many and substantial ways in the years ahead. They gave us a bright vision in the darkness of a post war era.

These two episodes, each the aftermath of war, indicate more clearly than anything else I can cite what has happened in this country in a hundred years, most of it taking place in the last half of that century. It is the growth of a national faith in education. That faith is of such magnitude that current carpings about educational practice are picayune by comparison. Indeed, they are only another evidence of that faith. We believe in this thing so passionately that we insist it must be perfect. It can never be, of course.

Last fall more than 31 millions of our people were enrolled in schools of all grades. That is one in five of our total population. In institutions of higher learning there were 2,700,000. In secondary schools there were 6,400,000. The elementary schools held 22,200,000. In 1950 American colleges awarded 432,000 degrees as compared with 49,000 in 1920. Never in the history of the world has any other society placed such emphasis upon education.

That emphasis is bulwarked both by custom and by law. The first two questions that an employer asks about the candidate for a job calling for any degree of responsibility are: What is his character? What

is his education? An insufficient answer to either of those queries is likely to disqualify him. State licensing laws increasingly have made education mandatory in vocational pursuits. Not until 1907 did all the states have licensing provisions for dentists, but in Pennsylvania today even the hairdressers are licensed, and now legislation is being discussed for the licensing of the men who repair your television set.

I know that for me to point to the growth of education in scope and quantity will not satisfy thoughtful listeners. Yes, we have more education, they say, but what kind is it? Is it better education?

Everybody will probably answer that question according to his own dogma. Each society tends to develop the kind of education that best meets its special needs. America's education is the kind called for by a dynamic and highly industrialized democracy. At the same time, its institutions of higher learning have such variety that a person is in sorry plight who cannot find exactly the kind of education he desires. There are the great state universities with their ramifications for the professions, industries, arts and technologies. There are equally large urban institutions organized to be responsive to the needs of their own communities. There are small, contemplative liberal arts colleges. There are church-related schools. There are experimental colleges. Whatever your educational ideal, you can find its counterpart in the institution of learning of your choosing.

True enough, American education by and large has broken with many of the cloistered traditions of European culture. We have made more progress with applied education than any other people. We recognize as valid and accept for credit laboratory experience gained off campus. The idea of internship has been borrowed from the healing arts and extended to many other forms of professional, business, and technical training. Cooperative arrangements have been set up between industries and colleges. Students who work their way through college are in many places now the rule rather than the exception. Such work, indeed, is regarded as part of the educational experience.

Outside employment joined with college study has been made possible for older people whose work week has been shortened by technological advances. College classes are now part of their leisure-time pattern. We read with great interest of England's experiments in adult education, some of her ancient castles having been taken over and renovated to become centers of labor education. Except for our lack of authentic baronial castles, I found nothing in this program that America has not been doing for twenty-five years and more.

These are some of the developments in education that account for

its phenomenal growth. If growth is any criterion, the answer to the question of whether we are doing our job is obvious. In some respects we are doing it too well, and out of that fact come some of our hardest problems. One cannot assess properly the extent to which we are accomplishing much unless he measures the dimensions of some of the problems we must meet.

Take the matter of faculties. Good teachers are hard to secure and harder to hold. Someone is always trying to take them away from us. Sometimes it's government. The Roosevelt and Truman administrations took educators to Washington in such numbers that the opposition brewed strong political medicine by deriding them as theorists and dangerous visionaries, and the newspaper cartoonists liked to depict bureaucrats as sad looking individuals in caps and gowns. Now the Republicans are in power and drafting academic personnel even faster than the Democrats.

Sometimes it is business. Businessmen have been known also to look down their noses at impractical professors, then to spend large sums to place such persons in important administrative positions in private enterprise.

Obviously, colleges and universities, with few exceptions, cannot compete salary-wise with either business or government for the services of those men called to take posts of responsibility. An irony of the times is that in this era of roaring prosperity the financial position of higher education is as precarious as any that administrative officers have known.

Last fall, for the first time since 1949, the decreasing trend in enrollments started back up, yet reports from all parts of the country indicate that the plight of the individual institution is worse. Administrators find costs still rising as endowments shrink. One out of every three liberal arts colleges is operating at a deficit. Some admit they are being forced to make economies which are compromising academic standards. The total number of teachers employed by our 1,850 institutions of higher learning is lower than last year's despite the larger number of students.

Because their income did not keep up with rising prices, all colleges and universities have had to trim necessary operating costs. Unfortunately, it has been the teaching staff of higher education which has suffered most. Faculty salaries rose from 40 per cent to 60 per cent on the average during a period when the consumers' price index when up over 80 per cent. Some institutions, especially the state universities, have been able to do more for their faculties than the average. The private colleges have lagged farthest behind.

This reduction in real income for faculties has occurred while other

sections of the population were improving their economic status. Income from professional practice has gone up notably in recent years. For example, the average dollar incomes of dentists more than doubled between 1940 and 1950; the average income of lawyers increased 85 per cent. The salaries of college and university teachers, never adequate, have lost ground relative to these other professions. In the early 1940's the average income of a dentist was about 30 per cent more than that of a college professor. By 1948 it was over 70 per cent higher. In 1948 the average income of a doctor was 2.5 times greater than that of a college professor; the average income of a lawyer was two times larger.

Today government and industry offer more immediate monetary prospects to highly trained young people than does a college or university. Higher education is accordingly losing essential young faculty members or finding it difficult, if not impossible, to recruit top-notch replacements for old faculty members. Increased salaries are essential to higher education if its intellectual quality is not to be lowered. It has already been seriously jeopardized.[8]

Tuitions average almost 100 per cent higher than in 1941-42. Social conscience says that is too much. The comptroller's ledger sheets say it is too little. State-supported institutions fare somewhat better, yet the allocated funds are almost always inadequate to meet increasing demand for educational services.

One of the great privately supported institutions of learning in this country is the University of Chicago. It is ably administered and generously endowed. Last fall the Chancellor's report to the alumni revealed that for the last five years the university's deficits have averaged more than a million dollars a year. The reserve fund which has underwritten most of this deficit has dwindled from $4 million in 1947 to $832,000.

Although tuitions have increased sharply in every institution, operating and maintenance costs have advanced even more rapidly. Colleges have always been careful not to become available for the economically favored, alone. But as many studies indicate, wealth is distributed differently now than twenty years ago.

As a rough indication of family ability to support a child in college, we may compare an income level of $3,000 in 1940 with an income of $5,000 in 1950. Census data indicate that in 1939 only 8.9 per cent of all families and individual income units in our country received wages and salary income of $3,000 or more. For 1949, however, the 1950 census revealed that 18.8 per cent of all families received an income of $5,000 or more. In these terms, then, which make allowance for price

[8] "Nature and Needs of Higher Education," pp. 62-63, Columbia University Press, N. Y. 1952.

increases between the two periods, the proportion of families in our country economically able to send a child to college may have doubled in a ten-year period. Indeed, in dollars of constant purchasing power, and after payment of all taxes, the per capita income of this country in 1940 was $1,089 and in 1950 it was $1,444. Thus while the costs of higher education have been increasing for the student, the ability of individuals to pay for higher education has also been improving.[4]

The most disturbing question for administrators is not are we doing the job. It is to find the balance among a set of new factors and conditions that will enable us to meet satisfactorily new assignments. This is not to say the outlook is without signs of hope. Colleges have discovered in recent years that although many sources of large giving have dried up, a lot of little people in this country are willing to give within the limitation of their means to keep alive centers of independent learning. Thousands of gifts year after year in the amounts of $10, $20, $50 and $100 provide a broader base of support, and they are equivalent of the income on millions in endowment.

Industry also has awakened to the fact that independent colleges are in their own way free enterprise and that their perpetuation is vital to democracy. To stimulate this awareness, colleges and universities in twenty states have banded together in cooperative associations and are making joint appeals to business organizations and private foundations.

In 1950 it is estimated that business and other corporations contributed from $40 to $50 million to higher education in America. This new source of support suggests a confidence in the purpose of the private institution and the college in our society.

Two weeks ago Union Carbide & Carbon Corporation announced it would finance two hundred scholarships this fall for students entering liberal arts and technical colleges. Two hundred more will be granted next year. This is recognition by industry of its need for technically trained personnel, but that is not the most significant aspect of the announcement. Union Carbide also is going to pay an additional $600 to the college for each of its scholarship students enrolled there. This organization is aware that a student's tuition and fees do not defray the cost of his education. In a privately supported institution, fifty to seventy per cent of that cost is a charge against the college's endowment income or other resources. Union Carbide wants to pay the full cost for its interest in education. This enlightened policy may point the way toward a partnership between business and higher education, with society as a whole becoming the chief beneficiary.

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[4] *Ibid.*, pp. 133-134.

The question of whether education is doing its job can be answered, of course, only in reference to the demands being made on it by society. Our greatest advances have been made in professional areas. The contributions of research to scientific advance and social gains, the need for professionally trained men in industry and commerce, and the wide variety of areas for which service is sought have placed heavy demands upon professional education. In no department of education is this more apparent than in the profession represented here tonight. Standards and practices in dental education in 1900 seem primitive to us today, but they were appropriate to the period.

The usual requirement for admission to dental school at the turn of the century was completion of a year in high school or work of an equivalent nature, as the early catalogues put it. Older practitioners tell me that "work of an equivalent nature" was usually construed loosely. It might be work on the farm or no work at all. Nowadays the minimum requirement is two years of liberal arts college training and no equivocation about it. In fact, more than half of today's students are offering more than this minimum requirement.

Dental education has come a long way in a short time. Other evidences are the accumulation of research and the mounting interest in research, the recognition that has been given to the dental specialties, the awareness of the need for postgraduate studies. Time was when the basis of dental practice was the knowledge of certain techniques and development of manual dexterities. Now the basis is an understanding of all sciences and their application to problems of oral health.

Preventive dentistry has occupied an increasing segment of thought and research in recent years. Not to be overlooked also is the search being carried on both by educators and practitioners for a way (a way outside of the yoke of political control) by which dental care for all may be realized.

All these things and more spell out the expanding dimensions of our job. We, too, are the product of our times and are educating men and women for this kind of dentistry because the times require it. The demands made upon the institutions of higher education, which have professional colleges, by social and legislative needs are becoming very oppressive. The cost to the student and institution concern us and must indeed be weighed. Its extent for medicine alone is indicated by extracts from a recent commission report.

The budgets of eighteen private and eighteen public universities with medical schools reveal that in most cases the medical school required from 20 per cent to 40 per cent of instructional expenditures, although

the number of medical students was only 2 per cent to 14 per cent of the total student bodies.

The Surgeon General's Committee on Medical School Grants and Finances (1951) estimated that in 1948 51 medical schools had "deficits" totaling over $9 million, deficit being the amount by which total expenses exceeded the income earmarked for the medical school. The total costs of medical education in 1949 have been estimated at $70 million. The Surgeon General's Committee reported that another $40 million was needed just for current operating purposes, without any expansion of program.[5]

The factors that measure our success in supplying professional education are physical plant, equipment, teaching staff and administrative vision. The last two elements, I think, are the most important. Administrative vision lies at the base of all sound education. Without that, we can't make even a start.

Let us look, then, to our teaching. Great teachers will be crippled if deprived of physical instrumentalities. In no field is this truer than in dentistry. Yet I have known, and so have you, of some of the miracles sometimes performed by taking little and making it much. On the other hand, expensive piles of steel, stone and marble, together with the finest installations of gadgets and gimmicks that money can buy, are as meaningless as tinkling cymbals unless they are warmed by a teacher's genius. No substitute has ever been found for human personality.

The problem for dental education, as in other fields, is that good teachers are in short supply. In a simpler day that problem was attacked in a simple way. A dean who was looking for a teacher would go to a practicing dentist who he regarded as competent and ask him to come out to the school and take charge of a section of students for three or four hours a week. In the next catalogue his name would appear as a Professor of Clinical Dentistry. The arrangement did not cost the dean much and it brought prestige to the practitioner. Incidentally, that method sometimes provided the school with good teaching.

Recruitment of practicing dentists for part-time teaching is still common. Infiltration of practitioners in a dental faculty can be a wholesome condition, but the day is gone when we can look to this source for the bulk of our teaching staff. One of the best evidences that dental education has come of age lies in the fact that today most of the instructional load in American schools of dentistry is being carried by full-time teachers.

Currently we face the temptation to call increasingly on the estab-

[5] *Ibid.*, pp. 95-96.

lished practitioners who are not liable for military service to replace on a part-time basis the competent young dental teachers being taken into the armed forces. If it is in the interest of the country to permit qualified students to complete their professional training, I wonder if it is not also in the interest of the country to permit dental schools to retain full-time faculty members who will supply that training. Inasmuch as this is a problem affecting the supply of future dentists, it is a matter that concerns the health and welfare of all the people.

Dr. J. Ben Robinson, of Baltimore, stated the case well in an address last month before representatives of the armed forces. He pointed out that capable dental teachers do not spontaneously issue from the ranks of the dental profession. Not only must they have an aptitude for teaching, but they must have time to acquire special knowledge and skills as well as time to prepare for the daily work of teaching. That any successful practitioner can teach if he is willing to make the effort is a delusion, he said. A teacher who has gained experience and competence in this specialized field cannot be replaced by a man called immediately from the rank and file of practitioners.

Allowing for the unusual exceptions to generalizations, I think that is a sound statement. A good teacher must know how to use different methods in different learning situations. He must understand human relationships, especially the attitudes of young people. He must approach his work in a spirit of inquiry and be constantly in touch with the latest developments of his profession.

I know many of you frequently find such men among your younger graduates. They have a gift for teaching, and not having had time to build a large stake in private practice, they can be encouraged to give their full time and energy to a teaching career. I think they should be invited to consider that possibility. When you bring such men back to teach in the school were they have studied, you may be accused of inbreeding. That criticism does not worry me greatly. Selective inbreeding is a useful device for developing desirable characteristics in plants and animals.

Whatever your method of faculty recruitment, may I, who have a deep interest in fine teaching on all university levels, recommend more attention to the philosophy and techniques of education. Some schools provide fellowships for outstanding graduates who are prospective teachers. I believe such fellowships should offer opportunity not only for work in fields to be taught, but in the process of teaching itself. Fellows should have a chance to get acquainted with testing methods, educational measurements, visual aids in learning, and the applications of psychology of teaching.

For that matter, regular members of faculties in graduate and professional schools could benefit from lectures, forums, workshops, and other forms of in-service training which would introduce them to modern educational thinking. I know of no good reason why students as they climb the educational ladder should not find as good teaching at the top as they did on lower levels, yet there is considerable evidence that they do not.

Some administrative officers may be reluctant to suggest instruction in educational method for their faculties. They fear the resentment that might be aroused among subject matter specialists. I think that fear is baseless. My conviction is based on our experience at Temple University where our dental school called in our Teachers College for professional consultation. A joint committee of the two faculties surveyed existing needs, and a course was organized under Teachers College leadership to meet ten specific areas of learning and teaching difficulties. Attendance was voluntary, but interest and cordial acceptance were found in every department in the dental school. Improvement in pedagogy was not the only benefit. Faculty members learned the views and objectives of their colleagues in other departments. Instructional overlapping was eliminated. A more cooperative atmosphere prevailed throughout the school. The result was better teaching, and better teaching brought better morale both to the faculty and the student body.

Experience shows that every faculty reacts favorably to evidence in the university of a positive interest in good teaching. The reason we don't get more good teaching is that we don't indicate clearly that we want it; or we pay it only lip service. Bound by tradition, perhaps we don't quite know how to do otherwise.

One of the problems that faces every administrator is how to appraise the teaching that is being done in his institution. Shall he do it by bending an ear to catch the whispers of student opinion and alumni recollection? How much weight shall he give to the random evaluations made by other teachers? Such information may be distorted forty ways by personal motive. It is come by in an unscientific manner. But a wise man will not reject it without examination. It is one factor in a multiplex situation. If opinions seem to represent a true concensus, they may be worth more than a straw in the wind. How much can he tell about teaching performance by studying an instructor's course outlines and syllabi? Such material may be valid evidence, but a great musical score can be wretchedly played. On the other hand, some teachers reach the heights through improvisation. They are at their best when they are playing it by ear.

Some administrators may prefer the direct approach. Personal ob-

servation, they think, is the best indicator. They should be reminded that this procedure creates an unnatural condition. A good teacher may be discomfited under observation and seem ineffective. A poor teacher may have enough limited reserve to make himself look good for a day. Teaching is a long-term performance. It is not what is done on Monday of this week and Wednesday of next. It is the total impact of day after day contacts.

Another administrative problem is what recognition shall we give for great teaching once we are aware of it. Not infrequently we tell the man to stop teaching, that we are going to make him an administrator. That sounds as illogical as anything that Alice saw in Wonderland, yet we do it. Sometimes we get a good administrator that way; sometimes we only lose a good teacher.

We should regard teaching as an end in itself. We should try to find for it the honors and rewards to make it a career to abide by. We usually are ready to make such rewards to men who are eminent in research. It is right that we should. The work of research men appears in books. It is discussed in learned journals. It brings fame to the university. It can be defined and it has tangibility.

The fame from great teaching will be delayed. Perhaps not for a generation will the spawn of a teacher's brilliant performance be apparent. In the meantime, he may have to be content with the modest recognition that travels over a student grapevine—the word-of-mouth appraisal that says "studying with so-and-so is a profitable and exhilarating experience, don't miss it."

That kind of recognition is as old as the university system. It was the thing that sent medieval scholars traveling across the face of Europe to sit with great teachers. That recognition had and has its satisfactions.

At some time, usually early in his career, an academic man has to set for himself a goal. Is he going to stake off an area of knowledge to be explored by him intensively and made to yield for other scholars facts yet unknown? Or will he find his task in synthesizing and humanizing knowledge from broad fields and presenting it in the most masterful way for an even wider audience? Will he be a great teacher or a great research man? Ideally, he should be both and once in a while he is. The fact remains that research and instruction are two masters. They make different demands, they pay different wages, and few men have the gifts, the energy and the time to serve both at the top of their ability.

Our responsibility as administrators is to search for both types, appreciate them for what they are and reward them in as even-handed a way as we can. I think that is the most important single aspect of the job that is yours and mine.

COLLEGE NEWS

Edited by SIDNEY EPSTEIN, D.D.S., *San Francisco*

College of Physicians and Surgeons:

ANNOUNCEMENTS

Dr. E. Frank Inskipp, professor of operative dentistry, has been appointed dean, succeeding the late Ernest G. Sloman.

Charles Scrivener, D.D.S., as assistant dean.

Iowa State University:

Announces appointment of William Simon, D.D.S., as Dean.

New York University:

ANNOUNCEMENT

The post-graduate training course in practice management is offered during the period June 8-12, and another in periodontia and oral medicine for the college year 1953-54.

APPOINTMENT

Dr. Raymond J. Nagle, former director, complete dental prosthesis and secretary of the faculty, Harvard University Dental School, has been appointed Dean of the School of Dentistry.

Temple University:

ANNOUNCEMENTS

Dean Timmons was awarded the Russell H. Conwell award for outstanding services to the university at the Annual Founders' Day Dinner February 14, 1953.

A two weeks' course in orthodontics is announced beginning January 24, 1954.

Tufts College:

ANNOUNCEMENT

Three courses have been announced: September 21-25; October 1, and continuing for seven months; and the third for an 18-month period from October 1.

University of Illinois:

ANNOUNCEMENT

A post-graduate course in cardio vascular diseases and the dentist, beginning April 8 for a period of six weeks, and another in "roentgenology—undistorted long cone technic" have been announced. The university also continues its post-graduate course in the basic sciences beginning in September.

University of Minnesota:

ANNOUNCEMENT

The eighth annual oral medicine seminar will be held September 17, 18 and 19, 1953. There will be three symposia, one on anatomy, on operative dentistry, and on physiology and pathology.

IN MEMORIAM

With regret, announcement is made of the passing of W. F. Lasby, former dean, University of Minnesota.

University of Southern California:

ANNOUNCEMENT

Research being conducted at this school is made possible on demonstration of bacteria actually decaying teeth. This was shown before the I.A.D.R. in Philadelphia in March, 1952.

University of Texas:

Announces appointment of John Olsen, D.D.S., as Dean.

University of West Virginia:

Announces the opening of a new dental school with J. Ben Robinson, D.D.S., as dean.

University of Maryland:

ANNOUNCEMENT

After 29 years of service to the school, Dr. J. Ben Robinson will retire at the end of this present semester.

University of Pennsylvania:

ANNOUNCEMENT

A 16 months' course in orthodontics is being offered, beginning in September.

National Bureau of Standards:

ANNOUNCEMENT

The bureau announces the availability of a new film demonstrating a method of making silicate cement produced by the bureau and the American Dental Association.

BOOK ANNOUNCEMENTS

Strong-Carter Dental Clinic. This is the 32d annual report of the Palama Settlement in Honolulu for the year ending August 31, 1952. This institution has done a very effective job during the 32 years of its existence; during that time the personnel has, of course, changed many times in both professional and nonprofessional staffs. A very comprehensive analysis appears on page 43 in the following statement:

"This year 47.9 per cent of the 73,636 public and private elementary school children reported, received complete dental services from private dentists and 17.9 per cent were attending but not completed. This represents a 3.1 per cent increase in the number of cases attending but not completed by private dentists this year over last year. In addition, there were 3.5 per cent completed and 2.0 per cent attending but not completed by the Strong-Carter Dental Clinic and the City and County Mobile Dental Union. The remaining .2 per cent attended or were completed by a self-supporting dental clinic. There were 28.5 per cent not attending a dentist. This is an improvement over last year's 31.3 per cent.

"There were three 100 per cent public schools and one 100 per cent private school. There were also 107 100 per cent classrooms in the public schools and 18 100 per cent classrooms in private schools.

"A total of 4547 sodium fluoride treatments were administered to ten schools on Kauai, one school on Hawaii and one school in rural Oahu.

"Our greatest need is 'additional positions' for dental hygienists to reduce the present heavy work-load, to take care of the increased enrollments in the elementary schools and to extend the services to the secondary schools."

A review of these figures may serve as a matter of encouragement to communities in states who have not carried out a similar program over so long a period of time.—Palama Settlement, 870 N. Vineyard St., Honolulu 17, Hawaii.

Principles and Technique of Exodontia. This is the title of a book by Frank W. Rounds, A.B., D.D.S., and his son, Charles Elder Rounds, A.B., D.M.D. This book was initiated by Frank W. Rounds, a well known and popular exodontist, but, as stated by Dr. Kurt H. Thoma in his foreword, "following his father's untimely death, Dr. Charles Elder Rounds has supervised the publication of this volume. . . ."

The book consists of 407 pages with an index and 365 illustrations. Again, as stated by Dr. Thoma, it "should long serve as a tribute to . . . Frank Rounds, besides being a useful bequest to the dental profession." Published by C. V. Mosby Company, St. Louis. Price, $10.00.

Proceedings, Institute of Public Health. This is a mimeographed copy of the First Institute of Public Health presented by the Dental Service, Veterans'

Administration Hospital, Tuskegee, Alabama, March 16 to 19, 1952. This is copyrighted by Clifton O. Dummett, D.D.S., director of the hospital. It consists of 197 pages, covering some 19 different subjects relating to public health.

Dr. Dummett will be remembered as the Dean of Meharry College of Dentistry, which position he resigned to become Chief of Dental Surgery in the Veterans Hospital, Tuskegee, Alabama.

This institute was sponsored by the Veterans' Hospital with the cooperation of 17 other health and welfare agencies. There were as many speakers as there were subjects and more discussors. Considering apparently the entire range of public health up to and including water fluoridation. A copy may be had by addressing Dr. Dummett at the hospital.

Complete Denture Prosthesis. This is the title of the third edition of this book by Schlosser and a new associate author, Dr. Gehl. Doctor Schlosser is well known in this field, having served in Northwestern University School of Dentistry for so many years. Doctor Daniel H. Gehl is professor of denture prosthesis, Marquette University School of Dentistry. The book contains 507 pages, including an index and 292 illustrations. It is well printed, on good paper, covering the subject from "Objectives to Case Reports and Treatment of Anomalies." Published by W. B. Saunders Company, Philadelphia. Price, $8.50.

Garrison State, The. This is the title of a 64-page, paper covered book issued by the University of Minnesota Social Science Research Center of the Graduate School. It carries forewords by two different authors, explaining the oddity (shall we say?), of the book. 'It is comprised of six different lectures on six different social phases of life, with particular emphasis on the question of human problems. It is the fifth in a series of annual public lectures on problems of current interest in the social sciences.

It is published under the auspices of the above mentioned research center, and may be had through the center for the asking or at a very nominal cost. It is not lacking in its value to the dentist.

Chromate Industry, Health of Workers in. This is the report of a survey of health conditions of workers in this field of industry. It consists of 131 pages with an appendix and a long list of references. Every phase of the physical condition of the worker appears to have been covered: long lists of tables and figures indicating statistical proof of findings are included.

The study was carried on under the direction of Seward E. Miller, M.D., medical director and Chief, Division of Occupational Health, Public Health Service. To any one interested in the matter of occupational hazards, the report should prove valuable.

It carries a considerable number of illustrations, some of which are in color. A little less than six pages are devoted to "Dental Findings." Workers may be divided into two groups:

	Chromate Workers	*Non-Chromate Workers*
Dental Caries	very little difference between the two groups—non-chromate workers appear to have given better attention to their teeth.	
Keratosis and inflammation	more	less
Periodontal disease	more	less

The discussion and summary including the references to literature are most important and on the whole very valuable from the total professional and health stand points. Dental teachers will find it helpful.

It is known as Public Health Service Publication No. 192 and may be had from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Price quoted on request.

BOOK REVIEWS

Current Therapy 1953. This is the title of a 1953 volume of this book, edited by Howard F. Conn, M.D., with 12 consulting editors and innumerable contributions. The book is well known within the medical profession and should by this time be well known within the dental profession. It is a handy volume for the dentist to have available. The book consists of 835 pages, including index. Published by W. B. Saunders Company, Philadelphia. Price, $11.00.

The History of Rhode Island State Dental Society. This is a paper covered book of 54 pages covering the history of the state society from the date of its founding, 1878 to 1953. It is intresting to note the advances that have been made and the interest of the men who have contributed to its advancement. Further information may be secured by addressing the secretary, Dr. Edgar L. Bessette, 1745 Broad Street, Cranston, R. I.

Oral Manifestations of Occupational Origin. This is the title of a paper covered book of 38 pages issued by the Federal Security Agency of the Public Health Service, known as Public Health Bibliography Series No. 7. It is exactly what the title indicates, a discussion of occupational hazards from the standpoints of acid, dust, gas, metals, organic compounds and certain physical factors. It may be secured upon request from the Federal Security Agency, Public Health Service, Division of Occupational Health, Washington 25, D. C.

Clinical Periodontology. This is a book of 1019 pages, including an extensive index and 742 figures or illustrations all in black and white. The book is well printed, on good quality paper, and illustrations are most acceptable, not only in that which they attempted to show, but with regard to the ability with which they show it. There is a long reading list at the end of each chapter and as indicated in the title it is for clinical use and should be of value to clinic teachers in that field. The author, Irving Glickman, B.S., D.M.D., professor of oral pathology and periodontology, Tufts College Dental School, is a well known periodontist within the profession. It is published by W. B. Saunders Company, Philadelphia. Price, $15.00.

Crown, Partial Veneer or Three-Quarters. This is the title of a small technical book of 61 pages with an index, well illustrated and printed in good form. The author is Walter E. Jones, D.D.S., a practicing dentist in Minneapolis. Published by Burgess Publishing Company, 426 South 6th Street, Minneapolis 15, Minnesota. Price, $3.00.

"Knowledge stands in as vital relation to the growth of reason as iron and phosphate to the enrichment of the blood. Ignorance is weakness. Success is knowing how. Ours is a world in which the last fact conquers."

—Newell Dwight Hillis.

General Information

Address all correspondence relating to manuscripts and copy for publication in this JOURNAL to the editor, John E. Gurley, University of California, College of Dentistry, The Medical Center, San Francisco 22, California.

Address correspondence concerning sale of the JOURNAL and advertising space to the business manager, Charles W. Craig, University of California, The Medical Center, San Francisco 22, California.

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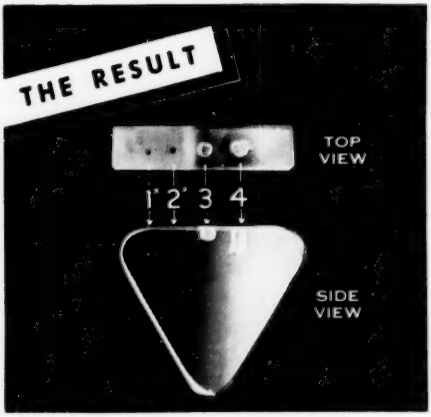

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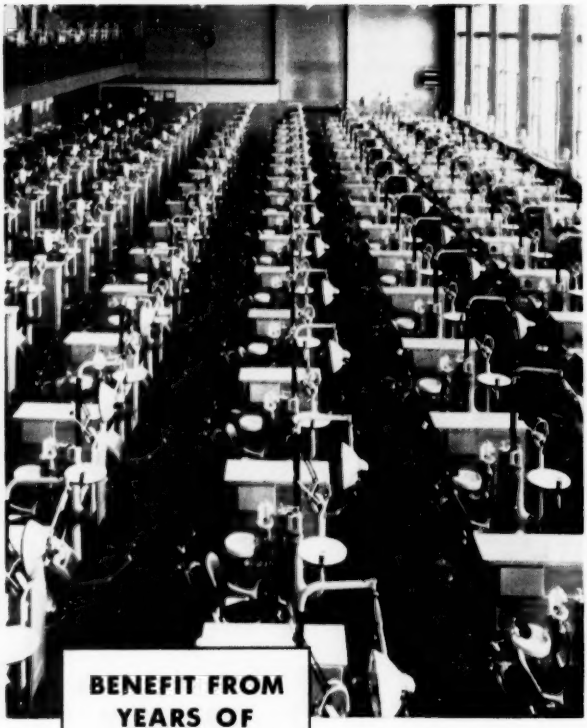

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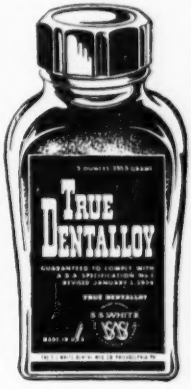

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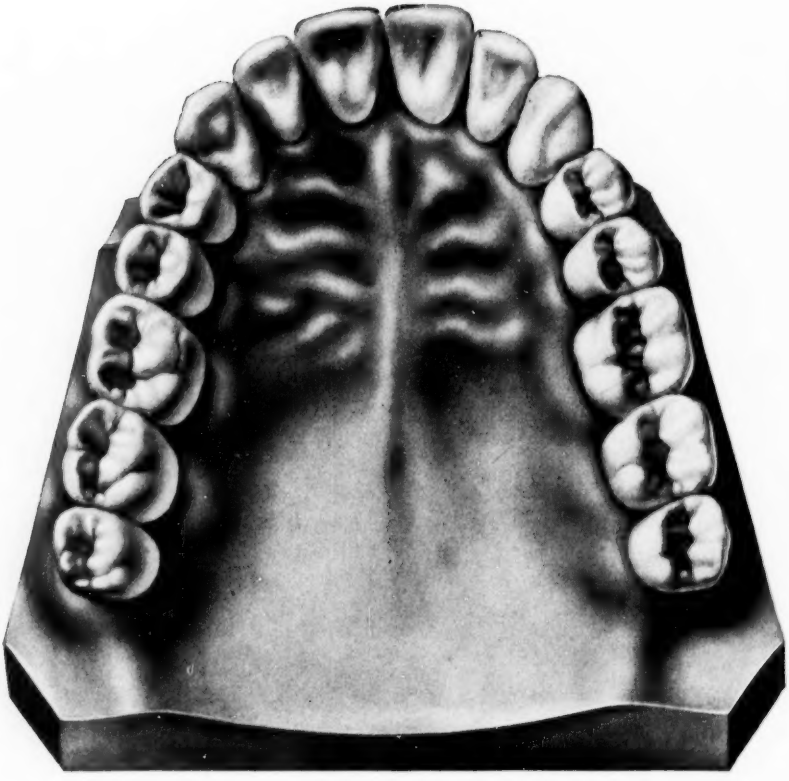

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